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CARL SCHMAEDIG.
New Jersey model flyer, won acclaim by capturing the 1954 N. Y. Mirror Meet with his Babcock equipped plane pictured here. Said Carl, *"The complete reliability of Babcock equipment made it possible!"*

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MODEL AIRPLANE NEWS

26th Year of Publication

MARCH 1955 Vol. LII—No. 3

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WILLIAM WINTER, Editor
WITTICH HOLLOWAY, Art Director

Contributing Editors: Peter Chinn (England), Don Grout, Ed Lorenz, Ted Martin, Bruce Wennerstrom, Harry Williamson

Executive and Editorial Office: 551 Fifth Avenue, New York 17, N. Y.

Advertising Manager, N. E. Slane, 551 5th Ave., New York 17; West Coast Adv. Mgr., Justin Hannon, 4068 Crenshaw Blvd., Los Angeles 43, Calif.

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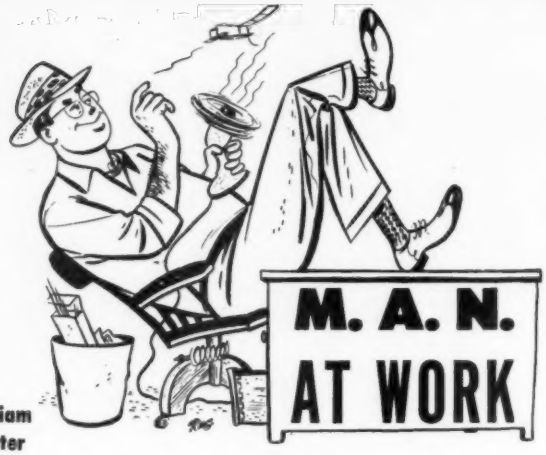

by William Winter

About 2,000 letters a month go across the editorial desk. Letters about new planes, questions of an almost baffling variety, opinions of all kinds, arguments over rules. Some amazing things develop from almost inconsequential beginnings. You get insights into developments, problems and events that King Solomon, had he been a modeler, could have benefited by.

For instance: "I was reading MAN (Dec.) last night, as I do always," begins Thomas DeVille, who, incidentally, was the 1952 combat champ at the Mirror Meet, "when I ran across the poem on page 61 and saw the news about Brown's Hobby Center and Van Cortlandt Park. It took a long time to get them to let us have it, but it was worth the battle, yet it seems that not enough ukie fliers go up there and I think I know why.

"I used to fly there, but so many cops ran us out that we came up at six o'clock at night, but that left only three or four hours to fly. We began flying in Morningside Park. This got to be such a hit that people came from all over. Even today, as cold as it is, we'll come out and fly until dark. We'll make a nice campfire, or bring out a little oil stove, have a swell time and, when we are finished, just have to go a few blocks to get home, not four or six miles. Besides, both bus and subway stop within 100 ft. of our lines."

Put these bits and pieces together, as the story unfolds, and you end up with a pretty good idea of what New York City modelers are like. Bear in mind that the whole country moans about losing flying sites; that, by rights, modelers should be as dead as dodos in a stone desert like Gotham. Brown's request for publicity, so modelers would make use of the Van Cortlandt Park facilities before the Park Department takes them back for lack of interest, produced a mob of free flighters. It's the ukie guys (*Continued on page* 6)

PLANE ON THE COVER

When the Douglas M-4 Mail plane was following crude beacons across mountains and prairies, the great air mail system was just gaining reliability. Staunch aircraft like the 400 hp Liberty-engined M-4 helped maintain schedules. Dramatically pictured at waning of sunlight—down low it's almost dark—by cover artist Jo Kotula, the M-4 spanned a shade under 40 feet and cruised at a thundering 110 mph, although the top was 145 mph. Fully loaded, the plane weighed less than 5,000 pounds; only 2,910 empty. Landing speed was 58 mph. Our modern aids unknown.

NEXT MONTH'S COVER

Once the most dreaded plane in the world, the Junkers Stuka dive bomber, or Ju-87, pounded Poland, the Low Countries and France into submission. Teamed with tanks, it was a frightful weapon, but the English Hurricanes and Spitfires, plus radar warning, took its measure. Engine, the Junkers Jumo of 1,300 hp; 45 ft. 4 in.; 210 mph maximum; varying loads were carried.

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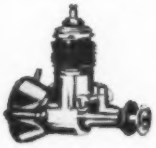

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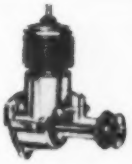

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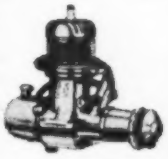

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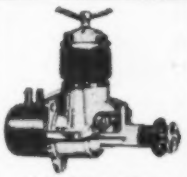

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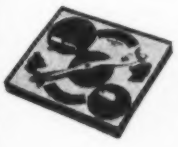

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Buried in This Ad

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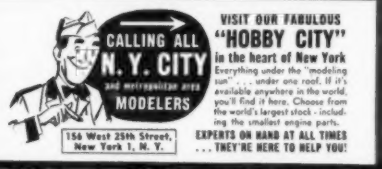

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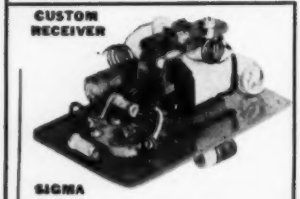


CUSTOM TRANSMITTER BOX INCLUDED

ALL THREE $9.98

RECEIVER TUBE "IDLES" WHILE RELAY REMAINS IN UNENERGIZED STATE. (saving tube and battery)

TUBE CURRENT INCREASES and RELAY BECOMES ENERGIZED ONLY WHEN TRANSMITTER IS KEYED

SHOULD RECEIVER or TRANSMITTER FAIL WHILE IN USE MODEL COMES IN RATHER THAN FLYING OUT OF SIGHT (This new type of "Fail Safe" operation fully explained in our instructions)

Fully Re-Designed "CUSTOM RECEIVER" weight under 3 ounces including 10,000 ohm relay (relay included) plus Silver Ceramic Trimmer, midget resistors & condensors, Nylon Coat Coil wire etc. Uses one X F G 1 Tube which IDLES while relay not energized saving Tubes life, Batteries etc. "CUSTOM TRANSMITTER" 27 M C Exam. Free Band with pre drilled base etc. Transmitter box only 4 ½" x 5 ¼" (Box Included) may be hand held or placed on Field. Has range of 1 mile or more. Full Drawings and instructions included. "CUSTOM ACTUATOR" of new magnetic principal operates both rudder and elevators or rudder alone off battery supply, no rubber used for Boats, Aircraft, or Cars of small ½ A size up to large 8 ft. models. You do not have to be a Radio Expert to assemble the 3 units, all parts are tagged and marked to correspond to drawings.

"CUSTOM MIDGET" RECEIVER TRANSMITTER and ACTUATOR..... $9.98 ☐

Also Available "STANDARD MIDGET 1" Radio kit, this group of 3 units, same design as above, same Relay, Same type Transmitter and Actuator. The difference from above is the Receiver weight which is greater (slightly over 4 ounces) Heavier components used.

"STANDARD MIDGET I" RECEIVER TRANSMITTER and ACTUATOR..... $6.98 ☐

PLANS FOR THE "CUSTOM MIDGET" all three units... 50c ☐

BOOKS
"RADIO CONTROL OF MODEL AIRCRAFT" $3.98 ☐
"RADIO CONTROL OF MODELS"..... 2.50 ☐
"RADIO CONTROL SHIPS, BOATS, AIRCRAFT"..... 3.98 ☐

"SUPPLY SOURCE DIRECTORY" Tells where to obtain Relays, Tubes, Crystals, all types equipment low as 1/20th normal prices. $7.00 MERCHANDISE COUPON FREE with Directory..... price $1.00 ☐
"SPECIAL 10 FOOT TRANSMITTER AERIAL"... $1.00 ☐ SPECIAL 10,000 OHM SIGMA RELAY... $2.98 ☐

X F G I tube... $3.50 ☐	0 to 3 Milliammeter... $3.50 ☐	Soldering Iron..... $2.98 ☐	Black Crackel Finish Transmitter Cases
3-A-4 tube..... 1.00 ☐	0 to 50 Milliammeter.. 2.75 ☐	Battery Tester, reads 0 to 2 Volts and 0 to 50 volts..... 2.98 ☐	4" x 5" x 3"..... $2.98 ☐
3-A-5 tube..... 1.35 ☐	Both Meters above.... 5.25 ☐		6" x 5" x 4"..... 3.25 ☐
Keying Switch.. .50 ☐	Peterson 27.255 M C		6" x 6" x 6"..... 3.50 ☐
Micro Switch.. .98 ☐	Z-9 Crystal..... 4.85 ☐	Electric Motor 6 volt for Boats 2 to 4 Ft. $8.50 value..... 3.88 ☐	10" x 8" x 7"..... 3.98 ☐
Photo Elec. Cell .98 ☐	Rosin Core Solder, Kesters 3 ounce box.. .50 ☐		Neon Bulbs 15 for 1.00 ☐
Variable Resistor .50 ☐			

25c ☐ NEW and FULLY REVISED Radio catalogue. Shows parts as low as ½ to ¼ the price you normally pay. Also gives more details, more photos etc. of our kits.... 25c. **25c** ☐

MODELLERS—Check off each item you wish to order above. PRINT YOUR NAME AND ADDRESS on a separate sheet of paper with above order. Send REMITTANCE IN FULL.

RADIOMODELS, BOX 36, DEPT. M BALTIMORE 6, MARYLAND

MAN at Work

(*Continued from page 2*)

that need to show. Ye Ed heard from guys who fly combat under one of the bridges, from a 12-year-old who stunts a K & B .35 on an East Side street, pushcarts or no (for Heaven's sake, men, let's not get too boisterous or we'll all be tossed out!), a combat-happy flier who wandered in to ask who builds radio, besides us, and a bunch of other die-hards, like Tom DeVille and his crowd.

DeVille wants to form a club (123 W. 131st St., New York, N. Y.). Gosh, man, you'll lose that flying field, if the mob descends on you, we warned him. "Well, it's either us or the golfers," he replied. "They are sticking tin cans into the ground, all over the place." Right now, we are circulating petitions among the neighbors to have them state that the noise doesn't bother them, then we are going to the Park Department."

That's another amazing aspect, here; these guys fly among apartment houses. Combat, even twin-engine combat. DeVille refers to multi-engined jobs as twins and triples, and has stunted the latter. A Dynajet stunt job was heard six blocks away—and no complaints. This they cut out because, after all, why ask for it?

When these chaps flew at another location, a police officer told them to beat it. While the boys sat, DeVille went to the station house and told the captain about their plight. Said lots of parents didn't like their kids going to distant parks, getting home late, etc. (Hearts and flowers, to be played on old violins). So Cap sez, "Tell that policeman to phone me the next time." With which, flying starts up and the policeman comes a-running. "Thought I told you guys to beat it," sez he. But after he phoned the captain, the officer didn't come back. Eventually, the fellows gave up the site, not on account of objection or the law, but because the concrete was rough on engines.

There's something warming, a life-is-worth-living aspect, to all underdog stories. Ever since David upset Goliath, we all get a charge out of seeing a little guy lick his weight in wildcats. Here are these hobbyists, up against the toughest flying site problem in the country. Do they quit? Do they take no for an answer? Does anyone help them? If they had sense, they'd quit. But they don't know how. We'd like to see other New York modelers join with them. As the man said, it's either they or the golfers. The city has shown interest in other cases (and how about those virtually unused circles at the World's Fair Parking Lot?), such as Van Cortlandt Park, so maybe they show it again and again. These supposedly helpless city boys have the guts. Don't bet against them.

* * *

▸ And, from Tony Alvarado, in Havana: "The Club Ciclon de Cuba regretfully announces the passing away of its model airport, after an acute attack by surveyors and bulldozers. Rest in peace . . .

"But, as every coin is two-faced, we are flying ukies and FF's together, with the gang from Club Aero Cubano, off the asphalt runways of Columbia Cuban Air Force Base. And now the bitter pill.

"Because of the wide-spread circulation of MAN here in Havana, we have never been able to launch our own model mag, so in solemn session it was decided to name MAN our model mag and yours truly as non-paid foreign correspondent, covering the Pearl of the Antillies (heh, that's us) and starting herewith, I'll drop you a line every few weeks to keep the Cuban modelers posted about our activities (we feel that if, because of MAN, we cannot publish a magazine, somebody has to pay for it!). If there is any objection to the above adoption (you may read kidnaping instead), please let us know."

Tony, if MAN has just keen kidnaped, we hope some dope doesn't offer a ransom. Ser-

(*Continued on page 38*)

Flash News

Many developments push back the air frontier -- this monthly report will keep you in the know.

▼

The U. S. Air Force is applying the lessons of the air-war in Korea to its organizational structure and is now in the process of creating a "task force" structure specially designed to handle the "small fires" which have become the Communists' stock in trade. Heretofore, broadly speaking, the Air Force has been organized along the lines of aircraft types: bombers in the Strategic Air Command, light bombers and fighter-bombers in the Tactical Air Command and fighters in the Air Defense Command.

Now, however, the Tactical Air Command is studying the creation of aerial strike units made up of atom bomb-laden fighters and light bombers plus transport-tankers. The high-speed jet bomber (Martin B-57) would be escorted by four fighters, the latter being refueled at a safe distance by the escorting tankers. These strike units could operate from overseas bases with minimum facilities, the necessary communications and housekeeping equipment being brought in by the transports when not used as tankers. During 1955 the Tactical Air Command will begin a series of operational tests of such strike units, which would move from their home base to advanced fields some 4,000 miles away, using the accompanying tankers for in-flight refueling. These units have the atomic bomb as their key weapon, the entire operation being fashioned to deliver it as quickly and effectively as possible.

New McDonnell F-101A, now in production, is revealed as a substantially modified version of the familiar XF-88 Voodoo fighter of the postwar period. The big, new fighter is powered by two Pratt & Whitney J57-P-13 turbojet engines with afterburners, which give it supersonic speed capabilities. Capable of carrying the A-bomb, the new Voodoo has an exceptionally long range for a jet fighter, permitting it to deliver the weapon from bases far in the rear. It is assigned to the Strategic Air Command, where it will also be tested as a jet bomber escort. It has a span of 39 ft. 8 in., a length of 67 ft. 4 in. and stands 18 ft. high. It features a high, swept, all-movable stabilizer atop the fin.

Navy has realined some of its latest procurement. Difficulties with the Westinghouse J46 engine has resulted in the cancelation of a $75-million production program and another $75-million worth of Vought A2U-1 attack versions of the F7U Cutlass as well. Also canceled is $36-million worth of Allison J71 turbojet engines originally ordered for installation in the McDonnell F3H Demon carrier fighter. Navy has purchased additional quantities of Grumman F9F-8 Cougar swept-wing carrier fighters to make up for these cancelations.

A super-research airplane may be in the design works to carry on the enormously productive programs of the Bell X-1 series and the Douglas D-558 and X-3 aircraft. The Bell X-1A has attained a speed of 1600 mph and an altitude of more than 90,000 ft., world's records for piloted aircraft performance but, of course, unofficial. Both the Air Force and Navy are studying designs to carry this work on up to the 2,500 mph and 500,000 ft. category to explore the reaches of outer space.

Air Force has been experimenting with the rocket-launching of piloted fighter aircraft and tests to date prove it feasible. A Lockheed F-80 jet fighter has been launched successfully from a Martin Matador guided missile launching ramp. The increasingly-long runways needed for supersonic aircraft take-off have turned Air Force attention to this means of zero-length launching and the use of Navy carrier-type arrested landings.

North American Airlines, prominent non-scheduled airline, has equipped a new Douglas DC-6B to carry 102 passengers in transcontinental service and is expecting delivery of a second airplane shortly. The transports are being purchased directly from Douglas, who equipped the 102-seat interior. North American will use the two passenger carriers in New York-Los Angeles and New York-Miami service at the same fares now charged for use of DC-4 equipment.

The long sought one-man helicopter has finally achieved official recognition and support with announcement of two development contracts by the Navy. Hiller Helicopters and Gyrodyne Co. of America has each received $200,000 in contracts to develop and flight-test their one-man helicopter entries in the recent design contest in which 18 manufacturers submitted a total of 30 designs. The machines will be designed for aerial delivery by parachute to beleaguered airmen down behind enemy lines.

The famed Collier Trophy for "outstanding achievement in aviation" goes this year to (Continued on page 50)

We're Growing With You Fellows! **This is Monogram's Tenth Anniversary Year!**

1945-1955 MONOGRAM MODELS • Inc. 10th Year

NEW ALL PLASTIC * 98c

Racing Speedboat • Monogram's Newest Plastikit

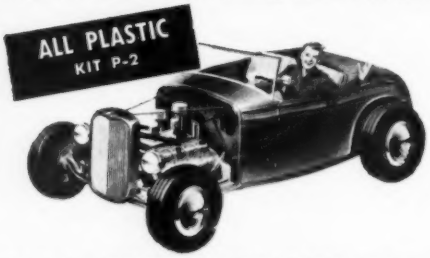
You'll get a real kick out of this new Monogram all-plastic Speedboat. The parts go together so slick and easy. And it's so good to look at you'll be proud of it when you finish it. The driver was modeled for us by a well known sculptor and the outboard motor is an exact miniature of the real Mercury. This is Plastikit P-3. At your dealer only 98 cents.

Choose Your Favorite There's Always More Fun With Monogram's Better Models

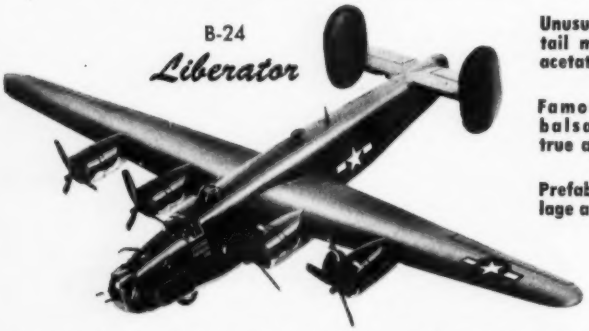
Since the first kit was introduced ten years ago, more than 30 million Monogram Model Kits have been sold. They're America's favorites you know. Now 40 different kits to choose from including those on this page.

If no dealer near you write address below. Add 25c (35c for bombers)

Midget Racer • With driver and dummy Offenhauser engine, authentic detail. Amazing realism. 98 cents.



Hot Rod • Modeled from 1932 Ford V-8 street roadster. Driver and engine. Unusual detail. 98 cents.



Unusual super-detail molded in fine acetate plastic.

•

Famous Monofoil balsa wing with true airfoil.

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Prefabricated fuselage and tail

Super DeLuxe Bombers

Without Exception America's Finest Airplane Kits

New Deluxe and Super Deluxe Bomber Kits With Molded Plastic and Finished Balsa Parts

Never before such kits as these. You must see them to realize how fine an airplane kit can be. Such realism. Such detail. Four engine kits are complete with cement and Mono-Dope in four colors.

B-17	Flying Fortress • Four Engine Bomber • Kit H-3	$4.95
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B-25	Mitchell • Twin Engine Bomber • Kit H-1	$3.50
B-26	Invader • Twin Engine Bomber • Kit H-2	$3.50

BUILD THRILLING BOMBERS WITH PRECISION PLASTIC AND FINISHED BALSA PARTS LIKE THESE.

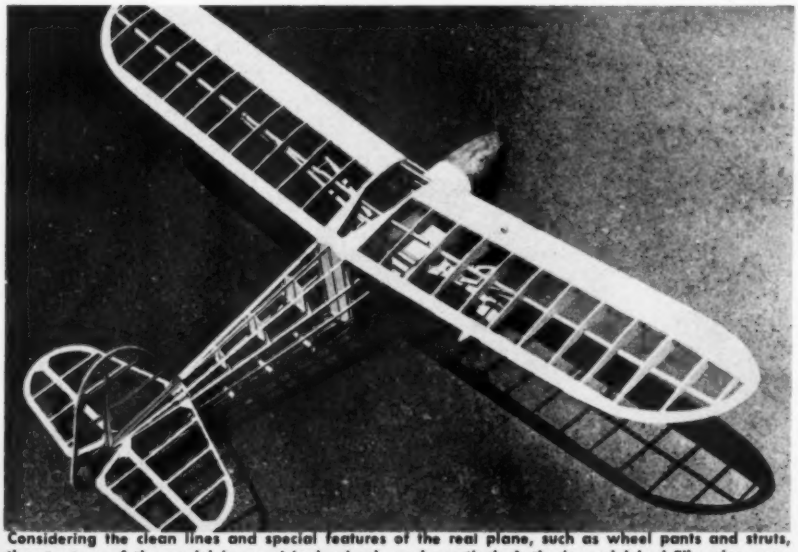
Monogram Models INC ★ 3421 West 48th Place • Chicago 32

Flipping the prop on his McCoy .049 Diesel, Walt prepares to take off the original model. The small amount of right thrust, plus wash-in both wing panels, provides left climb circles, right in glide.

THE REARWIN SPEEDSTER

By WALT MOONEY

Even had a modeler designed the real plane, it could not have been a better subject for a flying scale miniature. Perfect design, looks, sound structure, make this ideal for .049's.



Considering the clean lines and special features of the real plane, such as wheel pants and struts, the structure of the model is surprisingly simple and practical. Author's model had Fiberglas nose.

The Rearwin Speedster, an outstanding airplane of its day, had a top speed of 150 mph and a climb of 1,200 ft. per minute, using a 125 hp Menasco engine. It was two-place tandem and, with 50 lb. of baggage, had a range of 550 miles.

It has always been an effective flying model. One of the most beautiful rubber-powered flying scale models in Nationals history was a Speedster flown before the war by Ed Naudzius. Being a tandem, the fuselage does not become too wide when scaled up to still larger sizes. It would make an ideal flying scale radio control plane.

The model is exact scale except for enlargement of the horizontal tail and increased dihedral. The basic fuselage structure utilizes longerons, uprights and cross-pieces. The right side is indicated in phantom on the plans. Until final assembly, the upper longeron remains in the door area. Add the aft cabin bulkhead and former and all the cross-pieces. Then build the cabin in place, using 1/8 sheet for cabin ribs. One-eighth diameter hardwood dowel is used for forward cross-member and windshield diagonals. Build the door to fit in the right side and remove upper longeron from the door area. Hinge the door on its forward side. All stringers are 1/8 square balsa.

The motor mount is a plywood box open on the bottom. For extra strength, use Weldwood glue to assemble and attach it to firewall.

The wing is conventional. The root locating dowels and attachment hooks are wrapped with thread and cemented to the spars, using filler blocks on the spars for proper locating. Sew the strut mounting tubes in place.

However, the structure is strong enough for silk covering, which is much more resistant to tearing when the model hits a bush. Whatever you choose to cover the Rearwin, be sure the frame is well sanded to remove all irregularities. After covering and water-shrinking, the original model was given three coats of clear dope to seal the paper. It takes more coats to seal silk covering. Then an all-over coat of silver was sprayed on all the tissue parts. This can be quite thin and opaques the covering so fewer color coats are required. Then, in the area of the numbers and trim, the model was sprayed with two coats of cream dope. After drying 24 hours, the numbers and striping are masked off and three coats of red dope sprayed on the model. Since the original model was Diesel-powered, nitrate dope was used. Caution! If you are using a glow plug engine, use hot fuelproof dope.

Before covering, all the wood planked areas, wheel pants, strut fairing, cowl and landing gear fillets, etc., are filled with several coats of wood filler (a mixture of talcum powder and dope) and sanded until no grain shows. For final sanding, use 600A wet or dry paper. After cover-

Arguments about the relative merits of looks, detail vs. flying ability are made pointless by this Rearwin. Landing legs are shock absorbing.

Dream ship? Be mighty tough to draw up something prettier than this real airplane! Radio fans, why not scale it up? That really would be living!

The Rearwin Speedster

ing and doping with the color coats, these areas are rubbed down with rubbing compound to give the texture of metal. The fabric areas are not rubbed because fabric on the real ship wasn't as smooth as metal on the cowl and fairings.

The tail is straightforward in construction. Note the location of the heavy thread bracing wires. The landing gear is bound to the fuselage with thread and cemented in place. It must be bound to the longerons as well as the cross-members. The leg fairings are balsa, 1/4 sheet, streamlined. Leave a 1/32 in. gap between the fairings and the plastic balsa fillets which should be built up on the fuselage.

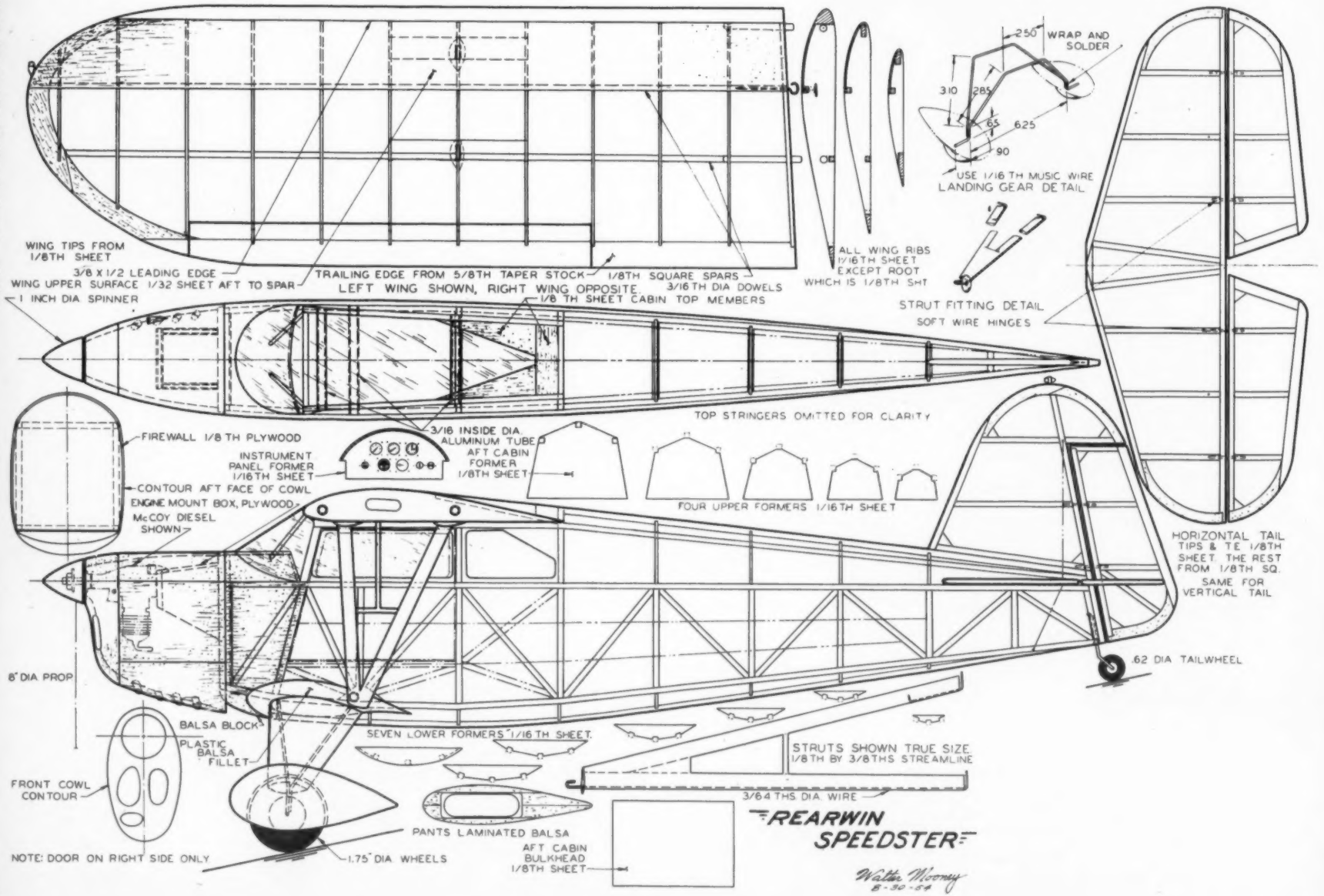
The struts are shown true length and give the correct model dihedral. Solder a shim-stock disc on the fuselage hook, as shown, to locate the root of the struts at the fuselage.

The cowl and pants are built up of balsa block laminations. Notch the inner side of the pants to allow the vertical leg of the gear to fit flush with the surface of the pants. Attach the cowl according to your favorite method.

Cover the model with your own preferred material. Japanese tissue was used on the original. The wing is built flat and, after finishing, the completely doped wings are held over the heater (no open flame) and given their washout by twisting up the trailing edge at the tip. About 3/16 in. is enough—the exact amount is not too critical—but it must be the same in both wings. The struts are made to length after washing out the wings and they then maintain the correct washout when the airplane is assembled. A typical color scheme as used on the original was all red with cream trim and numerals.

Flight adjustments on the model are the washout on both wings, as mentioned; also 1/32 washer was needed under the left engine bolt to give a small amount of right thrust. Zero rudder setting was used. The original climbed in left circles and glided to the right.

Get the engine running with the cowl off and then stop prop. Install the cowl and flip prop smartly. This worked very well on the original. If you find you need access to your engine, make 3/16 diameter holes in cowl at appropriate places, cut slots in the engine controls and use a screw driver for adjusting with the cowl in place. END


WING TIPS FROM 1/8TH SHEET
3/8 X 1/2 LEADING EDGE
WING UPPER SURFACE 1/32 SHEET AFT TO SPAR
1 INCH DIA. SPINNER
TRAILING EDGE FROM 5/8TH TAPER STOCK
LEFT WING SHOWN, RIGHT WING OPPOSITE
1/8TH SQUARE SPARS
3/16TH DIA DOWELS
1/8 TH SHEET CABIN TOP MEMBERS
ALL WING RIBS 1/16TH SHEET EXCEPT ROOT WHICH IS 1/8TH SHT
.250 WRAP AND SOLDER
.310
.285
.65
.625
.90
USE 1/16 TH MUSIC WIRE
LANDING GEAR DETAIL
STRUT FITTING DETAIL
SOFT WIRE HINGES
TOP STRINGERS OMITTED FOR CLARITY
FIREWALL 1/8 TH PLYWOOD
INSTRUMENT PANEL FORMER 1/16TH SHEET
3/16 INSIDE DIA. ALUMINUM TUBE AFT CABIN FORMER 1/8TH SHEET
CONTOUR AFT FACE OF COWL
ENGINE MOUNT BOX, PLYWOOD
McCOY DIESEL SHOWN
FOUR UPPER FORMERS 1/16TH SHEET
HORIZONTAL TAIL TIPS & TE 1/8TH SHEET. THE REST FROM 1/8TH SQ.
SAME FOR VERTICAL TAIL
.62 DIA TAILWHEEL
8" DIA PROP
BALSA BLOCK
PLASTIC BALSA FILLET
FRONT COWL CONTOUR
SEVEN LOWER FORMERS 1/16 TH SHEET
STRUTS SHOWN TRUE SIZE 1/8TH BY 3/8THS STREAMLINE
3/64 THS DIA WIRE
PANTS LAMINATED BALSA
AFT CABIN BULKHEAD 1/8TH SHEET
NOTE: DOOR ON RIGHT SIDE ONLY
1.75" DIA WHEELS
REARWIN SPEEDSTER
Walter Mooney
8-30-54

FULL SIZE PLANS AVAILABLE. SEE PAGE 52.

STUNT WING

By HAROLD REINHARDT

Toughest stunt pattern in America is at Mirror Flying Fair in New York. The winning plane must be tops. This is that ship.

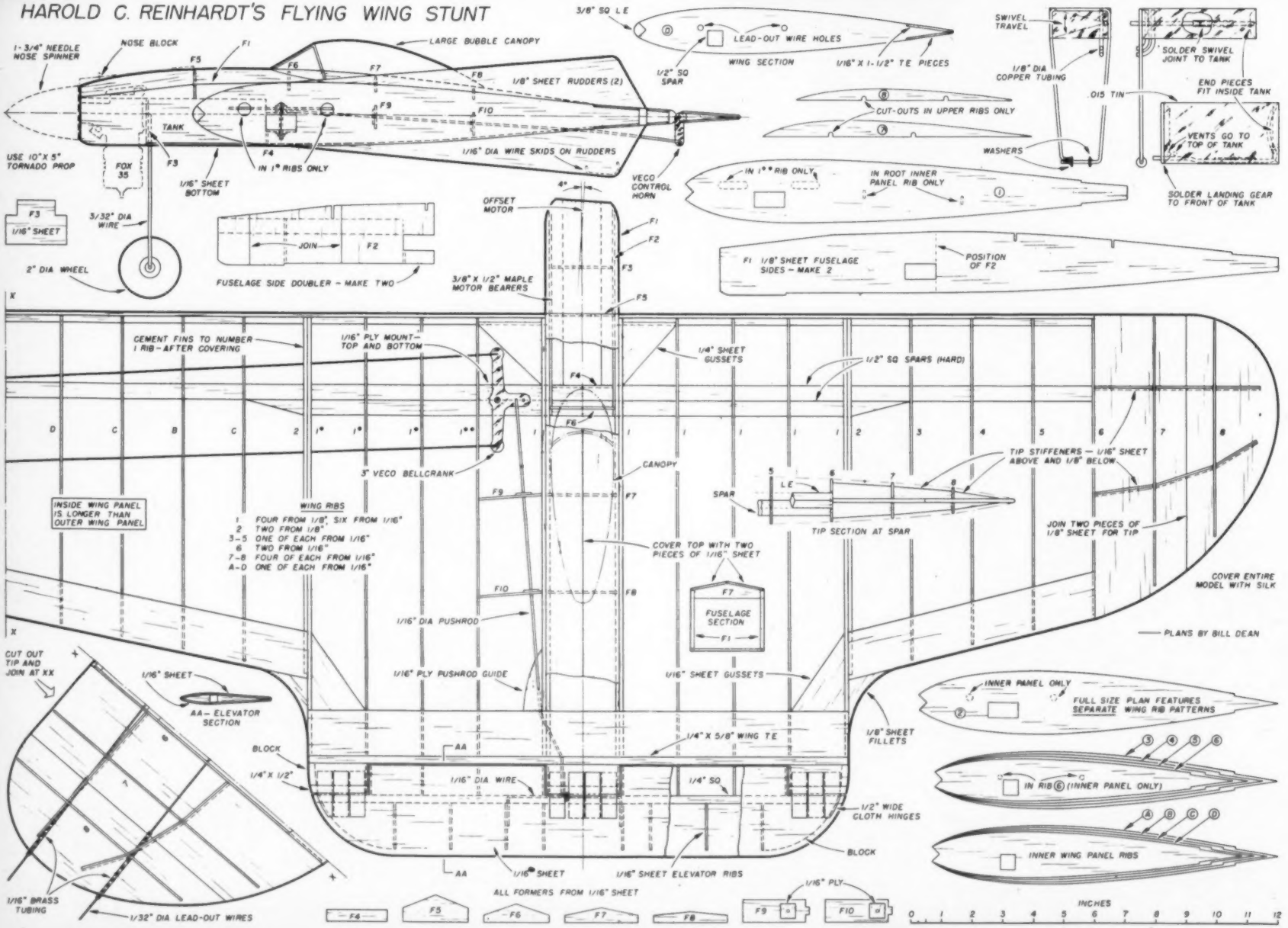
▸ This plane was designed and built just to prove that flying wings can fly precision stunt—and to try out a few other pet theories. One of the biggest troubles was the tendency to stall, which I tried to overcome with a balanced elevator. Another trouble was insufficient wing area on most ships, which made them wide-turning and too fast for stunt. The resulting wing flies well in the wind, is smooth and stable, and is not too fast for competition. The construction is quite simple, if you follow the step-by-step procedure.

Start construction by cutting the ribs and fuselage sides from medium sheet. Cement the doubler sheeting to the sides and add the motor mounts. Select the two main spars from hard balsa and cement them together. Slide the sides and ribs onto the spar and cement in place. Add the leading and trailing edges and wing-tips with ribs. Assemble the elevator as shown and attach with good cloth hinges. Install the control system and gas tank, fuselage formers and bottom sheeting. Drill holes for the engine (*Continued on page 41*)

Not too fast for competition flying, the Stunt Wing, shown here at Chicago Nationals with its designer, is a smooth, stable performer in wind.

HAROLD D. C. REINHARDT'S FLYING WING STUNT

HAROLD C. REINHARDT'S FLYING WING STUNT


1-3/4" NEEDLE NOSE SPINNER
NOSE BLOCK
LARGE BUBBLE CANOPY
1/8" SHEET RUDDERS (2)
TANK
USE 10" X 5" TORNADO PROP
FOX 35
1/16" SHEET BOTTOM
IN 1° RIBS ONLY
1/16" DIA WIRE SKIDS ON RUDDERS
VECO CONTROL HORN
3/8" SQ L E
WING SECTION
LEAD-OUT WIRE HOLES
1/2" SQ SPAR
1/16" X 1-1/2" T E PIECES
SWIVEL TRAVEL
1/8" DIA COPPER TUBING
.015 TIN
SOLDER SWIVEL JOINT TO TANK
END PIECES FIT INSIDE TANK
VENTS GO TO TOP OF TANK
SOLDER LANDING GEAR TO FRONT OF TANK
CUT-OUTS IN UPPER RIBS ONLY
WASHERS
IN 1° RIB ONLY
IN ROOT INNER PANEL RIB ONLY
F3 1/16" SHEET
3/32" DIA WIRE
2" DIA WHEEL
JOIN
F2
FUSELAGE SIDE DOUBLER - MAKE TWO
OFFSET MOTOR
3/8" X 1/2" MAPLE MOTOR BEARERS
F1 1/8" SHEET FUSELAGE SIDES - MAKE 2
POSITION OF F2
CEMENT FINS TO NUMBER 1 RIB - AFTER COVERING
1/16" PLY MOUNT - TOP AND BOTTOM
1/4" SHEET GUSSETS
1/2" SQ SPARS (HARD)
3" VECO BELLCRANK
CANOPY
TIP STIFFENERS - 1/16" SHEET ABOVE AND 1/8" BELOW
SPAR
TIP SECTION AT SPAR
JOIN TWO PIECES OF 1/8" SHEET FOR TIP
INSIDE WING PANEL IS LONGER THAN OUTER WING PANEL
WING RIBS
1 FOUR FROM 1/8", SIX FROM 1/16"
2 TWO FROM 1/8"
3-5 ONE OF EACH FROM 1/16"
6 TWO FROM 1/16"
7-8 FOUR OF EACH FROM 1/16"
A-D ONE OF EACH FROM 1/16"
COVER TOP WITH TWO PIECES OF 1/16" SHEET
FUSELAGE SECTION
COVER ENTIRE MODEL WITH SILK
1/16" DIA PUSHROD
PLANS BY BILL DEAN
CUT OUT TIP AND JOIN AT XX
1/16" SHEET
AA - ELEVATOR SECTION
1/16" PLY PUSHROD GUIDE
1/16" SHEET GUSSETS
INNER PANEL ONLY
FULL SIZE PLAN FEATURES SEPARATE WING RIB PATTERNS
BLOCK
1/4" X 1/2"
1/4" X 5/8" WING TE
1/8" SHEET FILLETS
1/16" DIA WIRE
1/4" SQ
1/2" WIDE CLOTH HINGES
IN RIB (6) (INNER PANEL ONLY)
INNER WING PANEL RIBS
BLOCK
1/16" BRASS TUBING
1/32" DIA LEAD-OUT WIRES
1/16" SHEET
1/16" SHEET ELEVATOR RIBS
ALL FORMERS FROM 1/16" SHEET
1/16" PLY
INCHES

FULL SIZE PLANS AVAILABLE, SEE PAGE 52.

White Sands Boonedockers, Las Cruces, New Mexico, do their building where the guided missiles are tested. Founder is Frank "Big Stoop" Garcher of Midwest.

Three smiling Texans, L to R: Jim Clem, Sam Beasley, Leo Holliday, with "Monster," 167.69 mph Monoline record breaker.

AIR WAYS

More reader pix, you say? Well, fellow modeler, how about sending some to us?

Home-made engines are not a novelty, but this truly exceptional job was made by Antonio Arria, Mendoza, Argentina. Used successfully in stunt.

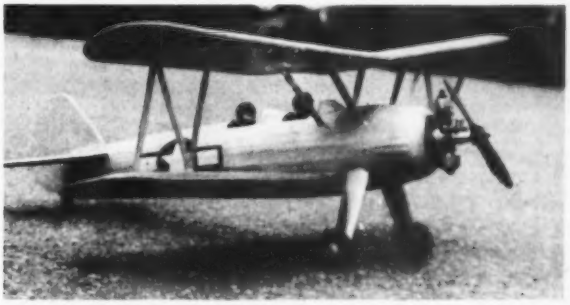
C. G. Moffat, Susanville, Calif., built this Fokker E-III from enlarged Nieto drawings (Oct. '51 MAN). Scale is 3/4 in. to the foot; power a Cub .09.

Fine solid scale model of unusual airplane, Dornier 335, by Cpl. McHard, won British Nats. Everything works. Copied from a captured plane.

Metal Douglas Skystreak, Dynajet engine, was seen at Glenview Nationals. This enterprising aircraft is work of Faygon Teverbaugh, Steger, Ill.

British ornithopter record of 1:55 was set with this most unusual biplane ornithopter by John White. If you fancy flapping wings, this is a dilly.

Great RC favorite in Britain is the Aeronca four-place. This particular midget, by Noel Bauer, is 9' 9-1/2", weighs 10 lb.; power, an OK twin.

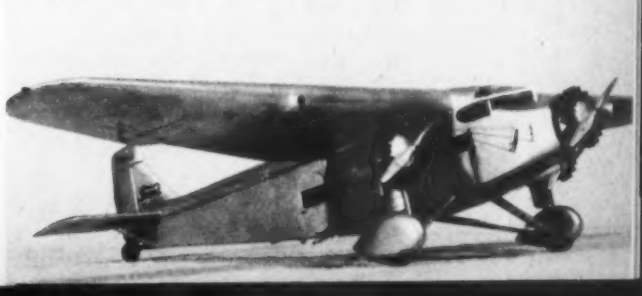


Cute Stearman PT-17 for free flight with Infant .02 engine, was built by William deHass, Jr., Houston. Span 23 in. Picture taken by Jack Claycomb.

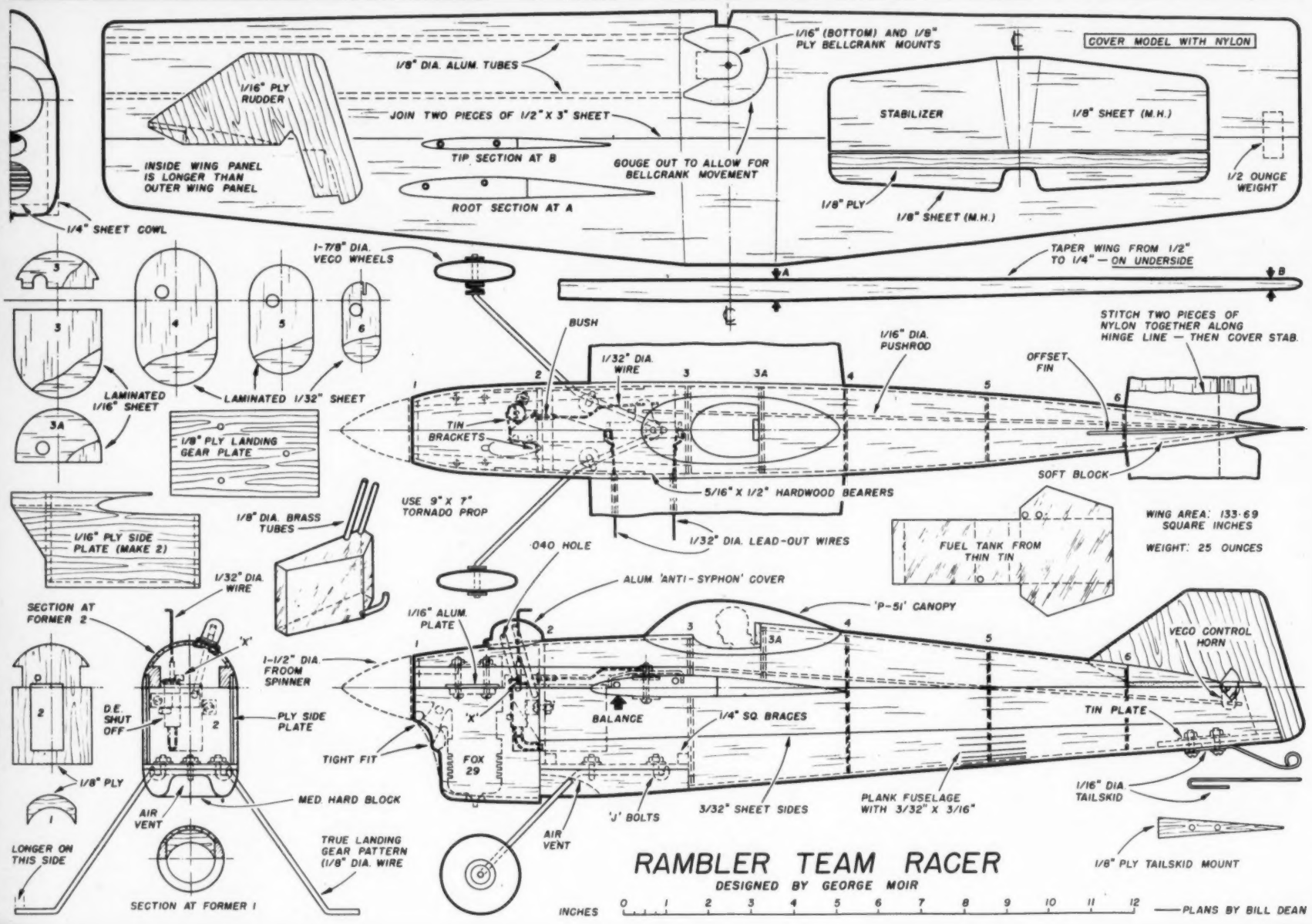
The 1936 Wakefield winner, A. A. Judge, displays prototype contest job for Jetmaster. Four-in. tail pipe for maximum thrust. Wing span, 28 in.

An Arden .09 proved hot and heavy when Ken Ernst, Indianapolis, built Nieuport, but does three minutes with K & B .035! Wing span is 33 in.

Magnificent Ford 5-AT Trimotor built in 1/4 in.-equals-the-foot scale by George Hardie, Jr., Milwaukee. Famous transport is all-time favorite.



FULL SIZE PLANS AVAILABLE. SEE PAGE 52.



RAMBLER TEAM RACER

DESIGNED BY GEORGE MOIR

PLANS BY BILL DEAN

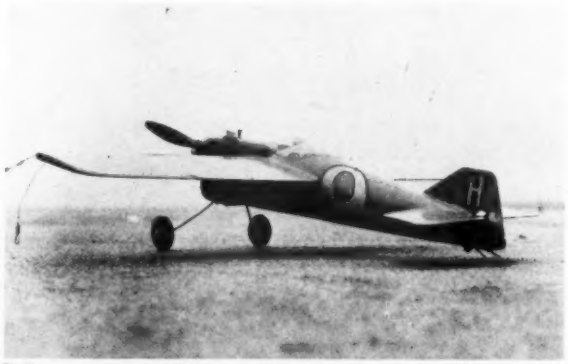
WINNING TEAM

the Plane

Hottest team in Nationals history: Bill Hollenbach, San Antonio, left; Moir; Bobby Huffer, who did the flying. And that ship cooks with gas, too.

By GEORGE MOIR

Nationals and Mirror winner, 32 winning heat races in the last 11 contests, is the scorching record turned in by this great racer. For mad engine doctors, details of reworked Fox .29, next page. This, gentlemen, is final word in team articles.



Ordinary appearance of the peppy Rambler hides a host of clever features most team adherents never heard of. The reworked Fox clips off 95 mph.

Loot from two seasons flying "Number 9." Nationals trophy in the center. Rambler has turned 140 laps in 8:51. Hot engine gets 40 laps per ounce.

▶ The Rambler team racer is the result of experiment, improvement and practice over a period of 18 months. The Rambler has six special features, built into it after much thought and testing, some of them serving a dual purpose. These are not all original ideas, but ideas gained through talking with other team racing enthusiasts. An analytical rundown may be helpful:

1. Anti-siphon cover over filler and vent tube; 2. Use of speed type tank. Located top of tank 9/16 in. above center line needle valve for smoother engine run in flight; 3. Drag wheel to keep plane heading toward outside of circle and permit quicker stops; 4. Use of laminated formers for lightness and added strength; 5. Off-center wing. Inside wing (control wire side) is 1-1/4 in. longer than outside wing. This gives more lift on the inside wing and permits smoother flying; 6. Soldered top on front vent tube with .040 hole drilled in the inboard side serves dual purpose: (a) When tank is filled, fuel will squirt away from plane and mechanic; (b) The restricted hole forces fuel into fuel line and venturi with first manipulation of the fuel pump and permits mechanic to start flipping prop at once. No waiting for tank to fill or for priming. Note: If you use bulb method, make vent hole larger.

After two seasons of tough team racing at all the major contests in the East (New York, Delaware, Maryland, Pennsylvania and New Jersey), these features paid off, as you shall see. Out of 48 heat races, this plane has 43 first places, four second places, and one third place. In 15 ten-mile races, this plane has taken nine first places, three seconds and one fourth. That is an average of 94 per cent in heat races and 70 per cent in ten-mile races.

To win races, there is a lot of necessary experimentation with fuels and props, also with getting the pilot to make spot landings. Don't forget, during the race the pilot is a busy man. Some of the pilots forget that the shortest distance between two points is a straight line; they do it the hard way, low on one half the circle and high on the other half. Learn to fly in a groove. It's easier on everybody, including the timers. Have the pilot keep in mind the pre-determined spot at which he should land. Have the mechanics space themselves at a 20 ft. radius around this spot, so one man will always be ready to start pit work, should pilot miss the precise landing point. Also have one mechanic count laps so he can signal pilot when to land for pit service. Allow two laps for the pilot to get ready for a safer landing. Never let tank run dry in

flight. Always bring in the plane while you still have fuel in the tank. Your practice work will determine how many laps you can get out of a tankful. Letting a tank run dry in flight will cause an engine to heat up more than normally and will make it harder to start.

Study drawings carefully before starting construction. The front fuselage section consists of 1/16 in. ply side plates under the 3/32 in. sheet sides. This makes a good solid support for the motor which helps get those extra revs. Formers No.'s 3, 3A, 4, 5 and 6 are laminated balsa, cross-grained. Double cement all pieces, and let set for 24 hours before cutting out formers. Trace side plate patterns, bearer outlines and cut out. Mark out former No. 2 (firewall) and motor bearers. Cement motor mount to side plates, then line up formers No.'s 1, 2 and 3 and cement in position. Let it set overnight. Cut out two fuselage sides and mark off positions for formers No.'s 4, 5 and 6. The top edge of the sides is on the thrust line, making it easier to line up wing and stab. Cement sides to front section, making sure motor bearers are in line with thrust line. Now start with former No. 4 and work back to tail, cementing both sides at the same time. Partially plank the curved sections of fuselage and leave sufficient room for checking elevator and pushrod. Add half former No. 3A installation. Don't plank front section until wing and motor are installed. The landing gear plate fits inside the 1/16 in. ply side plates. Bend to shape 1/8 in. steel wire landing gear and bolt to the 1/8 in. plywood plate. Use J bolts or eye bolts. Then install 1/4 in. square reinforcement blocks (cross-wise, from above). Outside wheel has two washers on the axle with room left for a thin rubber band to be wound around for the 70 and 140 lap races only. This keeps the plane heading toward the outside of the circle while running along the ground. With a little practice, you will be able to steer the plane on the ground by varying the amount of pressure on the control wires. This technique can stop the plane in half the normal distance. Leave the band off for qualifying and heat races.

The wheels are set well forward of the center of gravity and "nose grinding" is very unusual. Make up the fuel tank as shown and leave small end of tank open for checking fuel capacity. The tank should hold 29 cc of fuel. If you make a 29:50 cc (1 oz.) tank, with added fuel in the neoprene shut-off, you will be over the 1 oz. limit! This is where there should be a change in our present AMA rule. There should be an allowance of 50 cc for the fuel line and shut-off, but maybe—next year!

Hey, let's get back to the Rambler. Let's play it safe and stick to 29 cc in the fuel tank. Remember the front vent tube top is soldered to make a blank end and an .040 hole is drilled in the inboard side at the top. Check tank in the plane before installing D.E. fuel shut-off and see that the top of the tank is 1/16 in. above the thrust line.

Devise a strap (from tin can stock) and bend it around the fuel shut-off, using a 4-40 bolt to clamp it in position. Mark position on tank, then remove shut-off from clamp. Solder clamp to tank, install shut-off, then solder the front bracket to front of tank. This forms strong anchorage and facilitates adjustment on shut-off. Make up small tin plate and solder to shut-off release wire so that bellcrank pushrod makes contact only on full down-elevator.

Lay out and drill holes for mounting motor. No offset used. Make up two 1/16 in. plates out of hard alum. These plates are installed between motor base and motor mount to prevent motor from sinking into wood. Solder 5-40 nuts on tin plates, cut out to suit motor mounts and leave sharp V-shaped tabs on these plates. Turn V-shaped tabs so they will dig into motor mount. Double cement, then put on motor mounts. Mount motor, making sure 5-40 bolts only extend 1/32 in. above nuts.

The wing is shaped from a piece of medium hard balsa, 1/2 x 6 x 28-1/4 in. Shape to NACA 2409 airfoil. Taper wing on underside from (*Continued on page 32*)

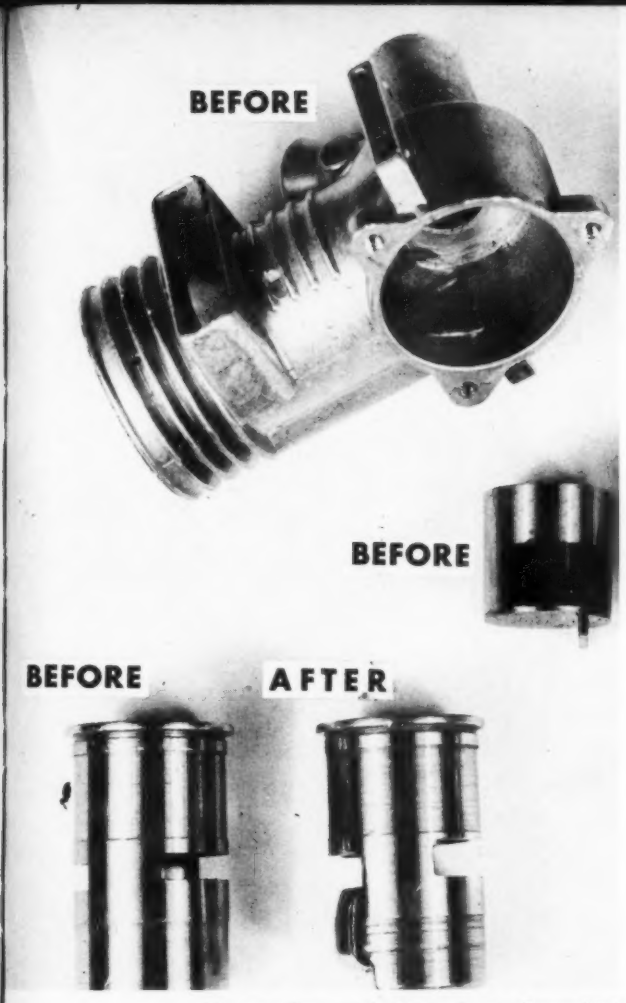
WINNING TEAM the Engine

Engines don't always have to be reworked to win, yet it is a fact that reworking is practiced, especially in speed. This is the Rambler's Fox .29.

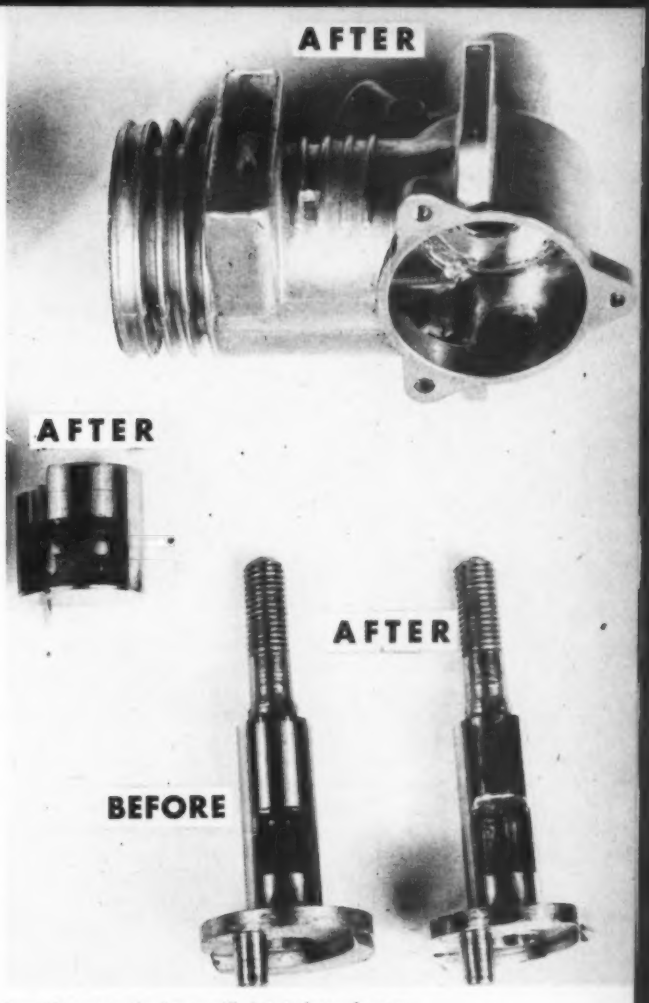
Procedure To Follow When Reworking A Regular Fox .29 Engine

▶ NOTE: This project is not recommended for beginners. Before you start to disassemble an engine, you must remember the manufacturer's guarantee is void when his product is reworked. Therefore, read this article thoroughly. Take your time and do a good job.

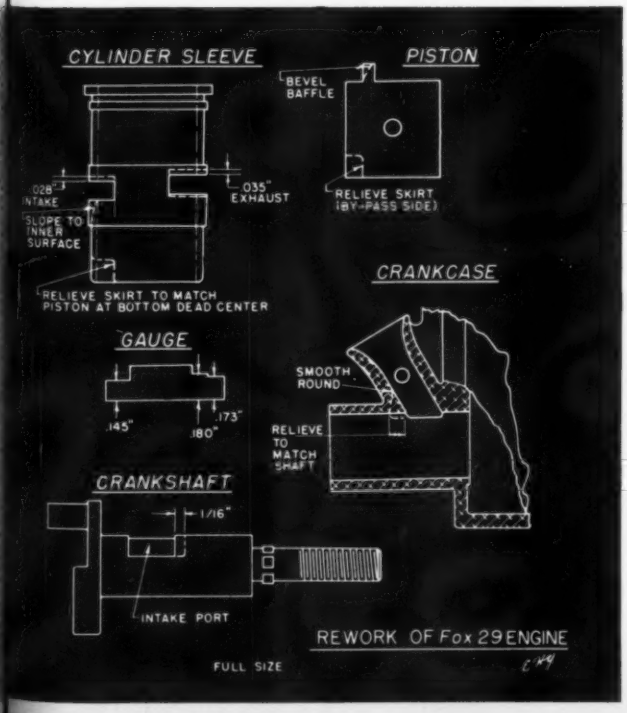
1. Make a step gauge as shown in drawing.
2. Remove head and crankcase cover.
3. With piston on bottom center, check position of top of the piston at the bottom of the exhaust port. Make note of this.
4. Remove sleeve, then work conrod off crank shaft throw, remove piston and conrod, also crank shaft from block.
5. File off top of exhaust port .035 (check with drawing). Keep checking with the step gauge (180) which should just enter and slide across full length of port. Take off sharp side edges of exhaust port only.
6. File off top of intake port .028. Be very careful not to widen port. Use gauge (173). Work slowly and carefully.
7. Round bottom of intake port. Then cut 1/8 in. opening at skirt of sleeve in line with intake port. Round the skirt at cut-out section (see drawings). Remove all burrs on inside of sleeve.
8. Insert piston in sleeve, line up baffle with intake port. Then mark skirt of piston in line with sleeve opening. Working to these marks, cut away section of piston skirt 1/8 in. high (see drawings). Remove all burrs and file marks.
9. Remove reinforcement on inside of piston. Don't touch area around wrist pin openings. Leave 1/8 in. support on both sides of wrist pin openings. This metal is brittle: don't put in vise.
10. Bevel piston baffle on intake side. Be very careful of outer edges.
11. Round all square edges on conrod body. Drill .040 hole in center of each end of conrod. Then with a 1/16 in. drill make a small countersink at each hole. This improves lubrication. Give conrod high polish.
12. Elongate crankshaft port opening at front, 1/16 in. Be very careful not to touch sides (*Continued on page 32*)

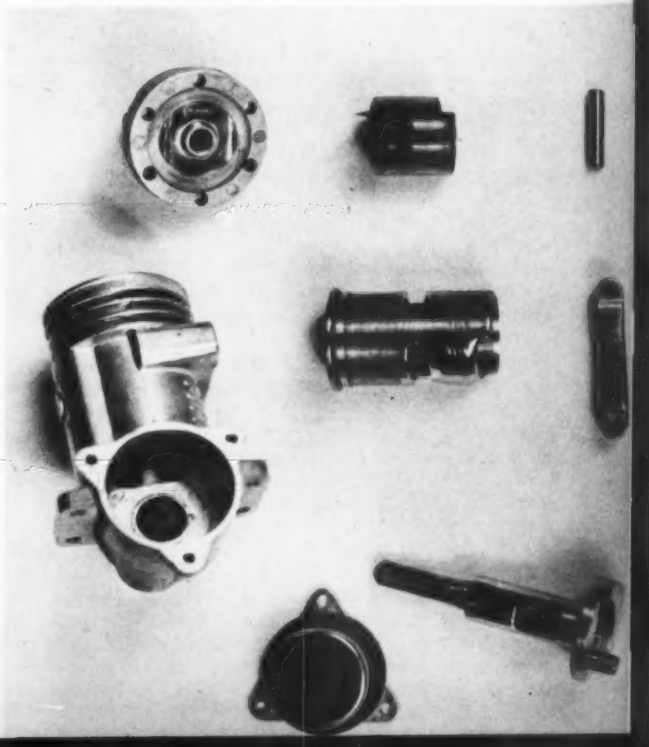


The parts shown on the left are from a disassembled Fox stunt .29, as the engine comes from the factory.



Even the unpracticed eye will detect these changes, especially port. Hopped up engine starts easily.





the TWO TIMER

By LYNN SKINNER

Are you flying a 1935 style glider? Why not get hep with a real flying machine, one that can beat a minute reliably in dead air? Sheet or built-up.

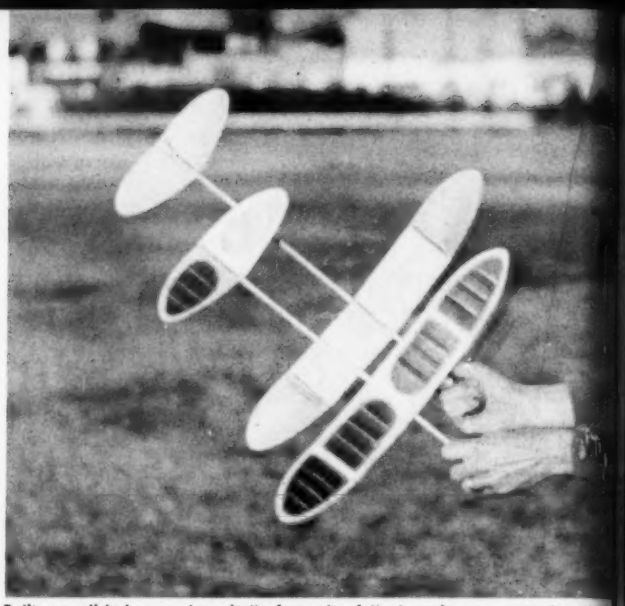
The development of the Two Timer began in the late summer of 1953. At the time we were attending a large Southern meet and naturally were looking at the many models that surrounded us, particularly the hand-launched glider entrants. There was visual evidence that the glider designs being flown that day were of the 1935 vintage. Why was it that this phase of our hobby had not seen the advancement design-wise as had gas, rubber, etc.?

At the majority of the meets we have attended, the awards for the glider events were just as large as those of the rubber and gas classes. Certainly, the time and money involved in the building of a glider are nil. The facts as we see them are that glider designs are at a definite stalemate. That night, while returning to our home from the meet, we began to think of ways to improve upon the present designs in an effort to remove this phase of modeling from the rut it was surely in. After mulling over the subject for several days, we set out to work.

To date eight gliders have been constructed and test flown. The design presented here incorporates the most desirable features of the eight test designs. The evaluation of these features is based on actual performance data. Therefore, the design is not an overnight innovation, but one on which considerable time and effort has been expended.

Each of the test designs utilized a different arrangement. Both high and low aspect ratio wings were used along with undercambered and flat bottom airfoils. Each design incorporated individual moments. Tests were made under calm weather conditions and also under some of the most adverse. At this point perhaps you are wondering what kind of flight times we were obtaining. The top design at about mid-point of the over-all test was clocking an *honest* 50 to 55 seconds consistently in dead air. At this stage of the test we were feeling very well satisfied with our effort. However, this contentment was very short lived. We soon began to toy with the idea of installing thread turbulators on the wings. After convincing ourselves that the model was gliding at an angular degree high enough to bring out the desired effects of the turbulator, we proceeded to install them on the wings. The turbulators increased flight times until we were consistently obtaining flights of over one minute. We would also like to mention the fact that the glider displayed a definite improvement in longitudinal stability with the application of the turbulator.

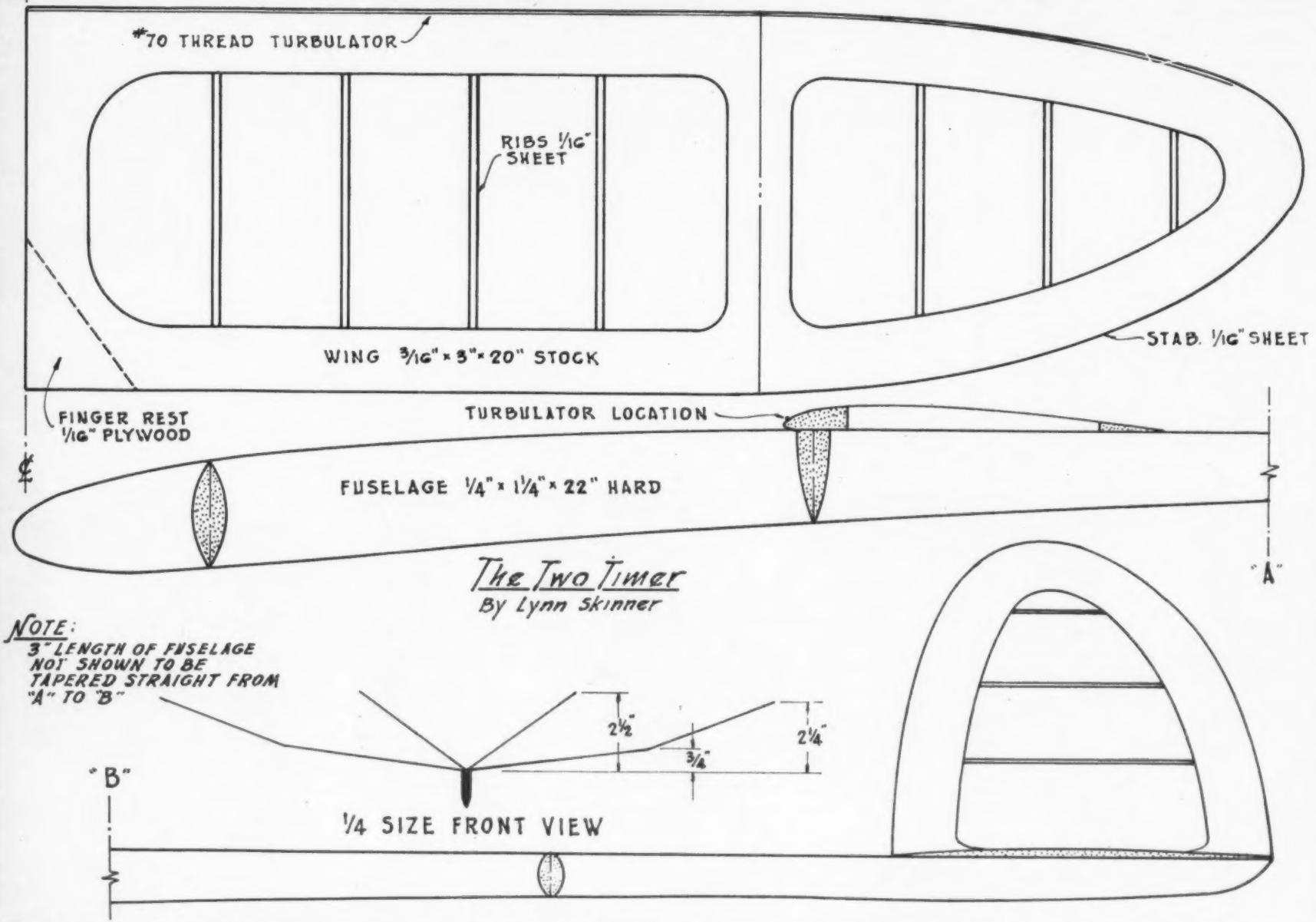
We will not go into the full details of construction as most builders are fully familiar with procedure. Note that both the solid as well as the built-up type may be constructed from the same plan sheet. The wing tip outline is also the outline for the stabilizer. Since the main theme of this design is a light and efficient wing, care must be taken to select prize lumber. For the wings, choose a piece of glider stock of about 6 lb. density. Use medium weight wood for the stab, and hard for the fuse. For those who have never constructed a semi-built-up type glider wing and would like to try one, it is very simple. First, using a soft lead pencil, mark off the sections to be cut out of each panel. With (*Continued on page 53*)



Built-up, all-balsa versions built from the full size plan on opposite page. Use of turbulator thread increases stability, time another 5 secs.

Author with another test model. Launch nearly straight up, with no roll, until momentum slows down. Half-roll results at top, going into circle.

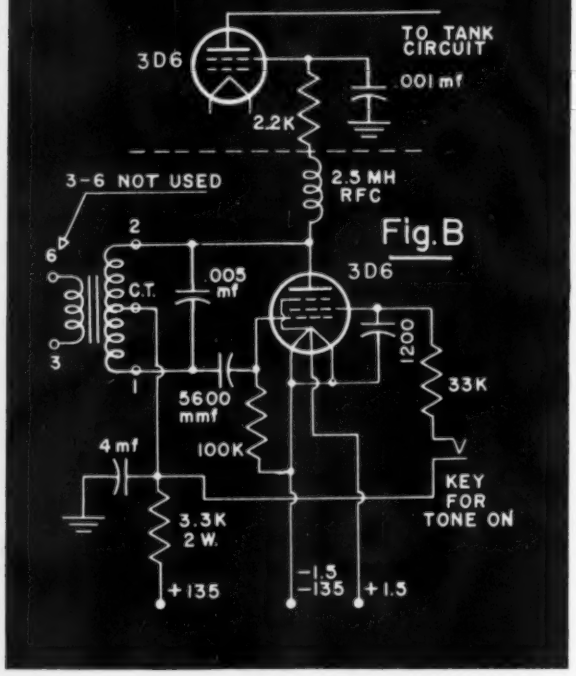
Fred Pearce with a test glider in summer of 1953. Note small floating wing trim tab. A light and efficient wing is the secret of its high time.

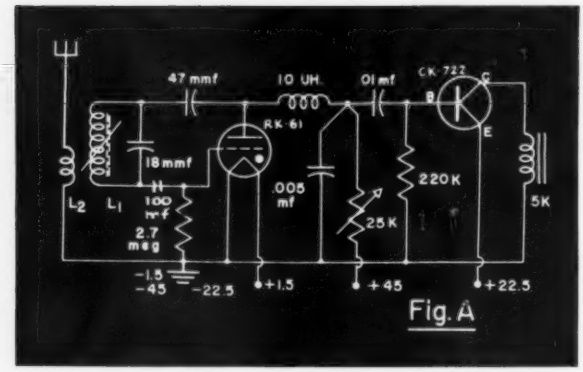


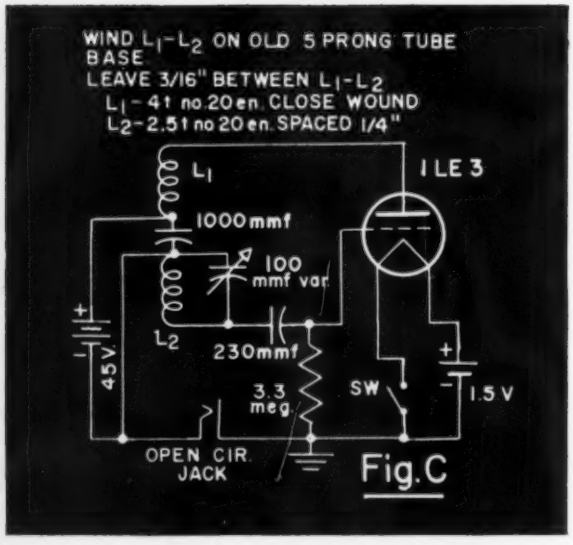
The Two Timer

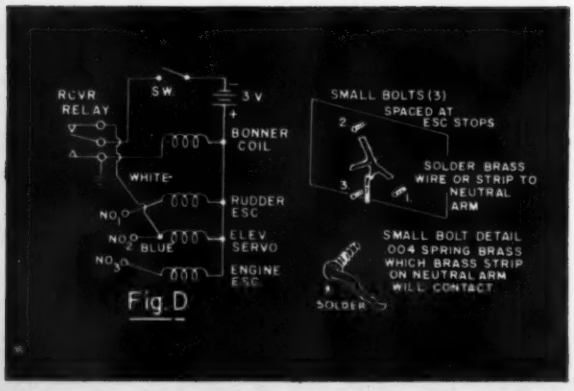
By Lynn Skinner

NOTE:
3" LENGTH OF FUSELAGE NOT SHOWN TO BE TAPERED STRAIGHT FROM "A" TO "B"









Radio Control News

By E. J. LORENZ

Modulate the Lorenz transmitter • Gimmicks, gadgets, gismos • Schematics • Club News • Trade development • Technical Topics • New planes and combinations • Contests • Cross-country round-up.

Technical Topics

▸ We are presenting some new ideas this month which we hope will help solve some of your problems in addition to giving you ideas on other pieces of equipment.

Fig. A is the work of Joe R. Smith, Jr., Apt. 60, University Village, Santa Monica, Calif. who came up with this circuit while doing a college thesis on transistors. A rather conventional first stage, using an XFG-1, feeds a CK-722 transistor. The first stage idles at from .2 to .6 ma. The collector current of the CK-722 operates from .1 to .7 ma, going from .1 to 1.5 or 3 ma upon receipt of a signal. When the first stage is drawing .2 ma, the collector current of the CK-722 is approximately .1 ma. With an incoming signal, the collector current will go to about 1.5 ma. If a greater current change is desired, R_1 will have to be decreased, and also R_3, which will increase the plate current of the first stage.

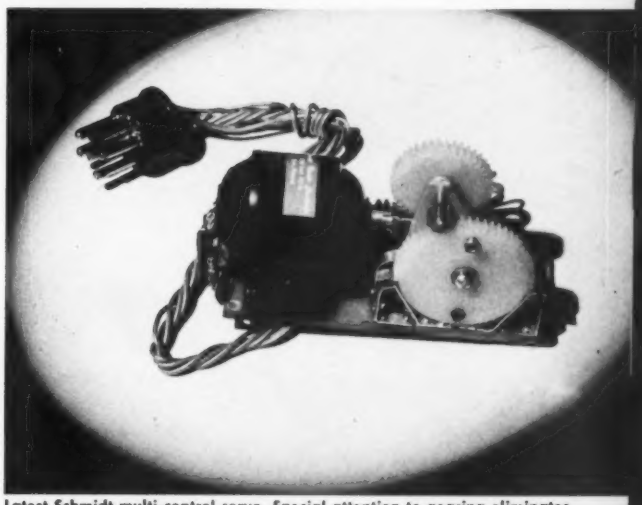
A 250K pot should be substituted for the 220K fixed resistor to determine the exact operating spot you want. Basically, the incoming audio signal to the base of the CK-722 is used to make the base positive, thereby decreasing the collector current. The on-off switch for this and similar transistor units should be an STDP switch which cuts both the A and B voltages from the circuit and each other. If this is not done, current will flow in the transistor. Mr. Smith tunes this receiver by putting a voltmeter across the relay coil, tuning for maximum voltage.

Fig. B is in response to readers' inquiries regarding a modulator unit for our two-tube transmitter. The circuit presented here is that of the ESSCO modulator, which works extremely well on our transmitter. The reason for presenting this particular unit is that the parts may be purchased at a much more reasonable price when using the special ESSCO audio transformer than when a regular transformer is used. This ESSCO transformer is a brand new unit from a well known company's overstock and its small size makes possible a compact assembly. While the transformer may be purchased separately, the complete unit is available in kit form, including all components and tube. Electronic Specialties, 58 Walker St., New York

Herman Haynes has over 100 successful flights on .19 Robot, using Miller receiver, home-made transmitter. Consecutive loops, rolls, rudder only.

A new deBolt symmetrical: 65 in., Fox .25 Bramco throttle, Schmidt radio, four-wheel gear, 100% balanced elevators, three multi servos, 40 mph.

Rockwood and Schneider's six-foot Cub-type RC jobs. Size reduced from Schneider's two-time Nats winner. Rockwood equipment. Schneider #1.



Latest Schmidt multi-control servo. Special attention to gearing eliminates possibilities of "death dive" lock-ins when fliers using the elevators.

City, furnishes full drawings for construction of this and a variable tone unit. On this unit, as with most tone transmitters, the RF carrier is on at all times and the audio tone is turned on by keying the screen of the 3D6 modulator. On our two-tube transmitter, operate the 3D6 amplifier at 135V instead of 180V.

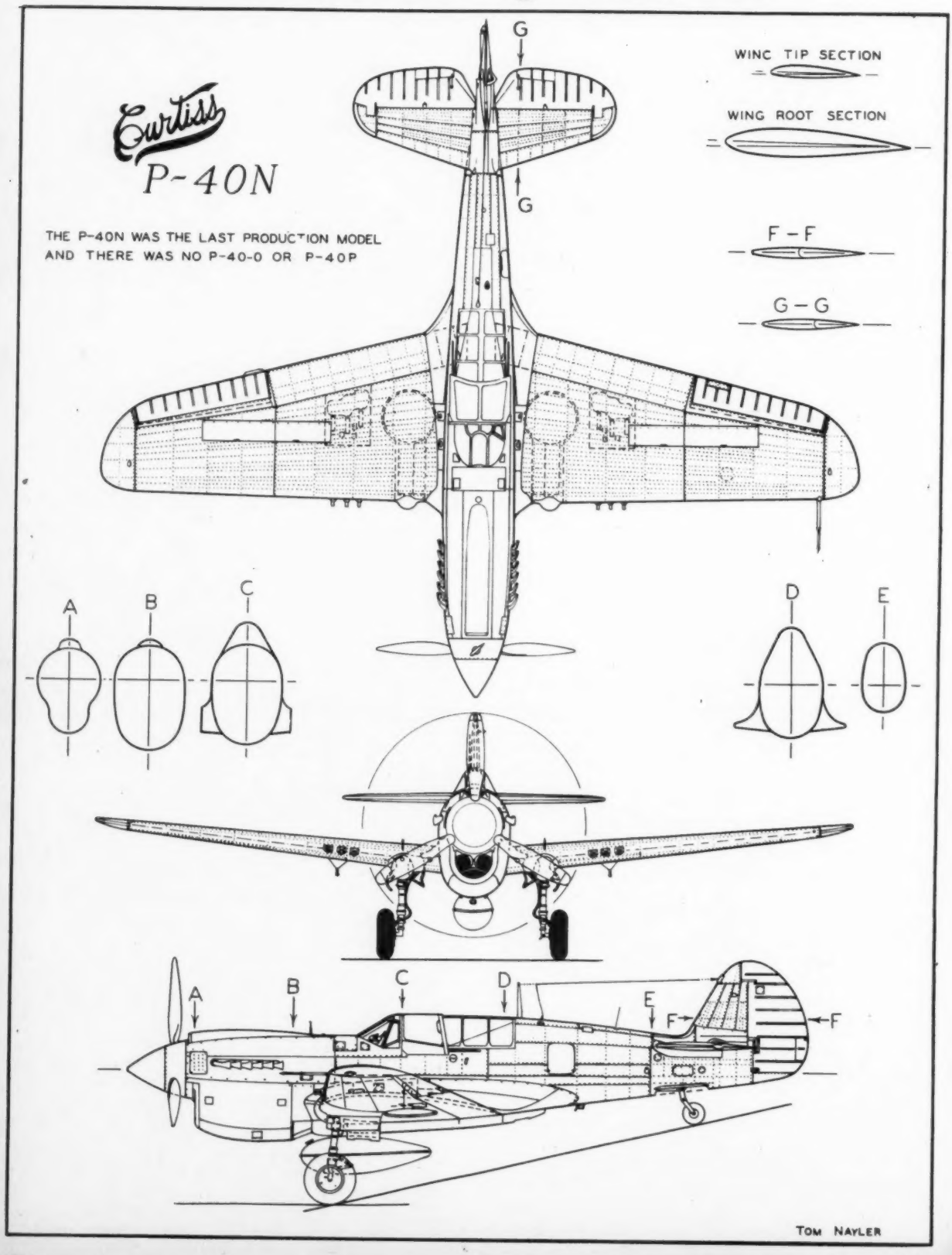
George Light, 51 Lindberg Place, Poughkeepsie, N. Y. sends in Fig. C, which is an adaptation of an interrupted oscillator. This particular unit is used to determine the resonant frequency of tank coils and circuits. When headphones are plugged into the open circuit jack, an audible signal is heard. As a tank circuit of unknown resonant frequency is brought near coils L_1-L_2 and the 100 mmf variable air trimmer is rotated, the audible signal will disappear, indicating the frequency. The 100 mmf capacitor should have a shaft with a small pointer knob attached. A 2 to 3 in., 180° dial plate is mounted on your chassis or box, behind the knob, for calibration. Needed to calibrate this unit is a grid dip meter, similar to the Heath, Millen, and similar equipment, or a communications receiver which goes up to about 35 mc. A "ham" friend or local radio repair shop should be able to help you out.

Using a pre-calibrated grid-dip meter, bring the coil of the grid-dip meter near the coils L_1-L_2 and set the grid dipper dial to about 25 mc. Rotate the 100 mmf capacitor until no signal is heard. Mark this point "25 mc." Continue over the entire 180° dial plate, obtaining a calibration mark for about every 1 mc spread. Construction is easy and the layout is not critical. Keep leads short and the wiring neat. Just as a more expensive grid-dip meter is a must in most ham shacks, we believe you'll find this an indispensible instrument for design work.

The Bonner compound escapement is becoming as versatile as the old Model T Ford. Kenton H. Brenegan, 16 Louise Ave., Chelsea Est., New Castle, Del. uses the system shown in Fig. D. This consists of using the three positions of a Bonner Compound to make electrical contacts, which will then operate other actuators. The escapement is mounted on a panel so that the escapement arms are projecting over the panel about 1/4 to 3/8 in. A short length of spring brass strip or wire (rather stiff) is soldered to the neutral position arm. A small piece of .004-.005 spring brass is soldered to each of three 4-40 machine screws, as shown in Fig. D. Next, position these screws so that the wiper on the neutral arm will make contact at each stop. The metal form of the escapement is grounded to the normally open point of the relay. Mr. Brenegan uses a Bonner motor servo for his elevator control. This looks like an ideal unit for a boat also and is just one more example of modeling ingenuity in trying to get more for less.

Norm Davis of Dansville, N. Y. had trouble when his N. A. twin-tube receiver "dropped out (*Continued on page 44*)

Planes Worth Modeling—CURTISS P-40N



Care and Operation of Escapements

By HOWARD BONNER & FRANK DAZEY

Escapements are taken so for granted that fliers expect them to function perfectly forever. Like everything else in radio control, escapements need occasional checks, adjustment. Here's lowdown.

▸ Successful radio control flying requires perfect functioning of plane, receiver, relay, escapement, transmitter and pilot. It is the purpose of this discussion to enable the modeler to get 100 per cent operation of the escapement, one important step toward successful RC flying.

Escapements used in RC models vary in design but their basic operation and adjustments are very similar. Should your escapement become damaged in handling or flying, you may readjust it by following a definite procedure. Refer to the drawing shown to become familiar with the correct names of the parts.

First, set the overlap correctly by holding the armature against the electromagnetic coil and rotate the escapement arm against the armature pawl. On the Bonner escapements, the overlap should be .015 to .020 in. This setting may be adjusted by carefully bending the armature pawl toward or away from escapement arm shaft.

Next, release the armature and bend the wire stop which the armature rests against in the released position, so that the escapement arms just clear the armature. Also, rotate the escapement arm assembly in the reverse direction by means of the crank pin to see that there is no wobble in the escapement arm assembly.

Now hold the armature against the electromagnetic coil and bend the neutral pawl so that the neutral escapement arm just clears it. This completes the adjustment procedure. However, if the escapement is dusty or dirty, dip the whole unit in carbon tetrachloride to clean it thoroughly. Watch for gummy residue from glow fuel between armature and electromagnetic coil. The ease with which the armature pulls in is largely determined by the width of the air gap, so avoid excessive overlap or clearance.

If it becomes necessary to set spring tension, proceed as follows: release spring from keeper hole in back plate and hook 0-2 phono pick-up scale on armature end. Energize escapement with 3 volts. Read maximum ounces on scale at which armature will pull in (should be 1.2 to 1.5 oz.). Refasten spring in back plate and use scale in opposite direction to measure spring releasing force (should be 0.7 to 0.8 oz.). See Fig. 1.

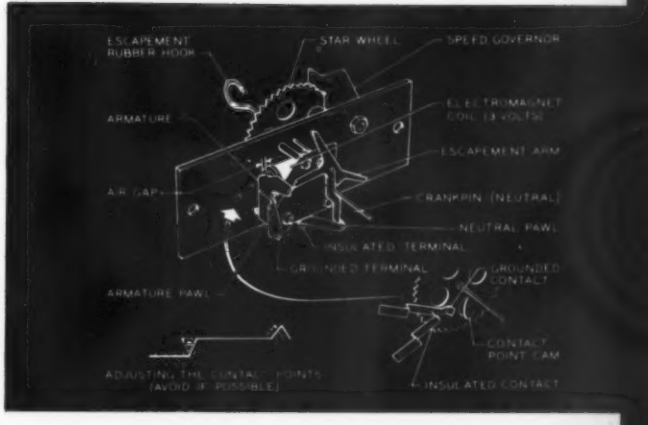
Mating surfaces of armature and rotor should be absolutely smooth—no burrs, no nicks. Use of 6 volts may magnetize escapement, interfering with its action. No need to use more than 3 volts at any time. You simply throw away power.

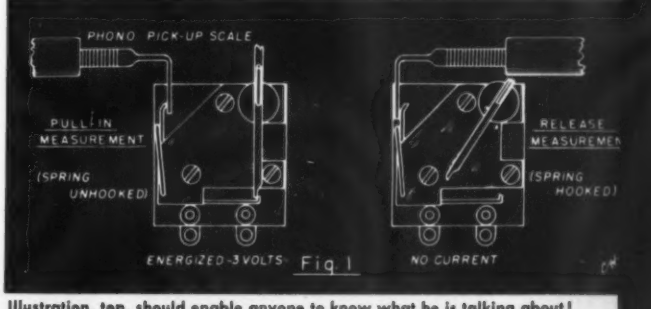
It should be noted that a perfectly operating escapement is dangerous with poor linkage to the control surface. Do not use a push rod if you expect maneuvers beyond smooth level flight and feather touch landings because the weight of the push rod causes excessive gravitational and inertia loads during dives, climbs and abrupt stops. The torque shaft system of linkage has the least number of bearing friction points and does not affect the operation of the escapement in any flying or landing attitude. Also, in hard landings or crashes, the torque shaft will slide clear and not damage the escapement. With the compound escapement, the rocking motion from the torque shaft pick-up loop was used in designing the crank pin stop positions, so it should be installed exactly as recommended.

(*Continued on page* 39)

At work in his shop, author checks out a batch of SN type escapements.

FOR THE RC FAN





Illustration, top, should enable anyone to know what he is talking about! Above—Simple test for checking pull-in and release tension of spring.

Timing and running charactristics vary according to type of flying. This scale B-25 had excellent single-engine performance at Salina, Kansas contest, a tribute to correct engine selection.

Engine Tests Summarized

By E. C. MARTIN

Just how do you test an engine? This and a zillion other intriguing questions are answered in a most readable article that, incidentally, touches on all sorts of things of importance to engine fans.

The recent reader survey conducted by MAN indicated many reactions to the engine test series and while it appears that most of our readers find them interesting and useful, there is also a small minority who question the value of engine tests on the assumption that we dare not pan the poor engine for fear of offending an advertiser. It is true that we have never condemned an engine outright, but the reasons are rather different, and since the matter has been raised, it may give the tests greater significance for everyone, if the reasons and procedures are explained.

First of all, in the rare cases where we feel that a new offering has no useful place among its competitors because of bad design, workmanship or performance, we simply pass it up, which offends nobody. There are more new engines each year than there are issues of MAN, so we have to miss some of them.

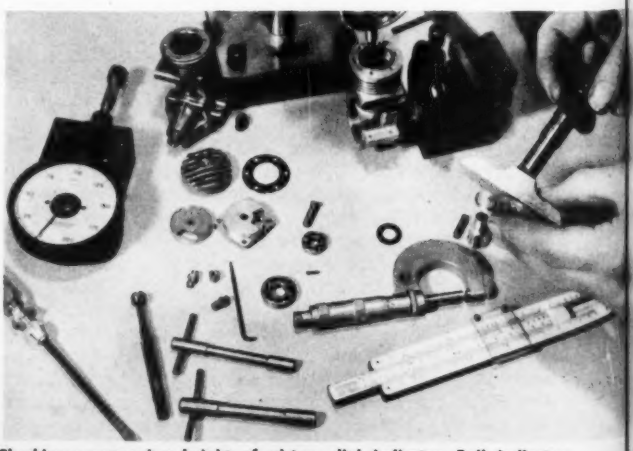
Secondly, large numbers of young modelers are presumably guided in the purchase of engines by these tests, and ill-considered or incorrect criticism could unfairly restrict a manufacturer's sales. Conversely, of course, an engine we praised might turn out to be a flop, to the detriment of the purchasers who were guided by our report. We therefore have a responsibility to be factual, accurate and cautious.

Thirdly, in the majority of cases, all our comments and findings on handling and performance are based on the behavior of one example and, although in this country most engines are produced in thousands on automatic or semi-automatic machine tools and are therefore almost identical, they do, nevertheless, owing to minute differences, vary as much as ten per cent in performance, and a poor example of one compared with a super version of another would give a completely erroneous impression. However, although our performance figures may, in fact, differ from the average of the many engines eventually produced, we are, nevertheless, in the same position as any man who buys one: we take what we get.

Finally, we occasionally find instances in a test engine where performance is below par for reasons with which we are familiar, in which case we consult the manufacturer and, with the fault rectified, publish the average of the two sets of performance figures obtained. In this way we attempt to further the fundamental cause of providing modelers with the best engines possible, whereas, had we condemned that engine, everybody would have been the poorer.

The obvious way to remove these performance reservations would be to test five or six identical engines concurrently and publish the average figures. However, apart from the initial outlay, and the fact that, after testing, the engines are definitely "used," there is the considerable amount of time and fuel consumed in breaking them in before any useful figures can be obtained. Except for the case of a very carefully checked and tuned ringed racing engine, an average of two hours' running is necessary to bring an engine up to its maximum—and often considerably more. This does not mean that an engine will be useless in a model until it has been properly broken in, but simply that unless the process is carefully carried out, it will not give the best comparison of maximum rpm on a given load in relation to displacement, which is our simple yardstick of performance. Therefore, cost ultimately determines the scope of the tests.

Break-in is accomplished in one of two ways. Those engines which are block tested at the factory as part of the final in-



Checking compression height of piston, dial indicator. Ball indicator (next to screw driver) measures bore main bearing. Tachometer, left.

Another specialized engine use is free flight. Here, Ray Matthews, the old payload king, prepares one of his well known Fubars for a take-off.

spection procedure, ascertained by the presence of minute axial lines on the ground skirt of the piston, are run up to maximum speed on a medium sized prop, and if they maintain power for a minute or so, are then tried on a small prop. If power is again constant for a minute, the medium prop is replaced and the engine run continuously for half an hour. If, at the end of this time, rpm has increased, it gets a further half hour, and another if the improvement continues. At the point where there is no improvement, the engine is ready for testing. If an engine will not sustain peak rpm for the initial minute on a small prop, it is stopped at the first indication of falling off, and from then on is treated as an unrun engine.

A brand new unrun engine is never wound up flat out until it has had an hour or more of one-minute runs on a medium-sized prop. As it begins to lose the "stickiness" common to new engines, the duration of each run may be increased until rpm falls off as the engine overheats. An engine is only ready for testing when it will sustain peak rpm for at least two minutes on the smallest prop suitable for that engine.

However, there are instances where two or three hours of break-in are insufficient. Although the engine will usually sustain peak rpm after this time, it may still give the impression of having a little more to offer, and in such cases the fact is mentioned in the report. Such engines have a sticky, bottled-up kind of exhaust note, whereas a free engine sounds it and will usually take a wider mixture variation without appreciable effect.

The average engine consumes about three pints of fuel in two hours, and a further pint or so on test. In the majority of cases, the engine is at its prime at the start of the test and can be expected to stay that way, or improve slightly, for at least eight hours. Some engines give promise of lasting a hundred or more hours, while some are definitely giving signs of going downhill at the conclusion of the tests.

We have twice run a model Diesel for four hundred hours, only stopping to remove carbon, and a hundred hour test is normal for a new prototype. If the twenty hour mark is reached without signs of excessive wear, a hundred hours is usually a foregone conclusion, unless a part fatigues from vibration. Glow plugs, incidentally, will seldom last more than ten hours, but the life entirely depends on rpm and the combined temperature effect of fuel, compression ratio, and the design of the plug.

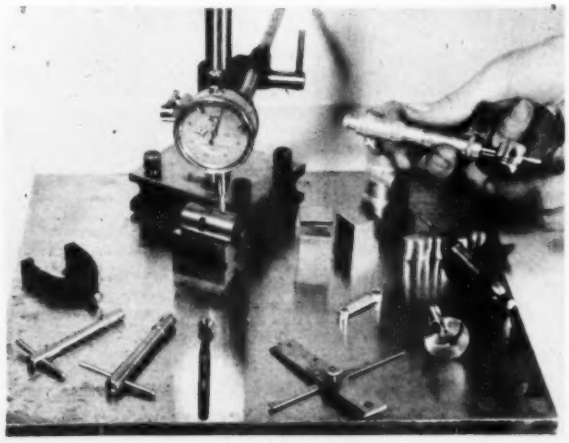
The order of frequency of individual failures in our experience is quite revealing and gives an indication of the weak points of contemporary design. Worn conrod crankpin bearings head the list by a handsome margin. Crankshaft main bearings come second and can usually be forecast by poor initial fitting and finish or bearing materials. Wrist pin bearings are third, and piston-cylinder wear last, although the latter is again usually predictable from initial fitting and, even when bad, will often cure itself as carbon build-up occurs. Among fatigue failures, the conrod and crankshaft run about even.

Racing engines have their own peculiarities, with the disc rotor heading the list and the conrod bearings second. If these parts stand up, the ball bearing ringed racing engine will normally outwear any other type with ease.

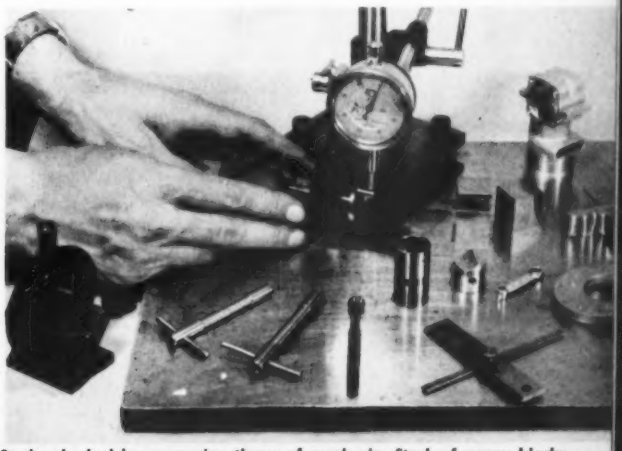
The Half-A glow engines are the least durable class, as might be expected, but with their remarkably low price and an average useful life of between eight and twenty hours, are still the most fun for the least money.

Our own private impression is that modern design and component proportions in relation to performance, weight and price produce an over-all best engine of .19 displacement. By this we mean that, if every available engine were given a value factor based on durability, performance, adaptability, fuel consumption per bhp hour, crash surival, first cost and spares cost in relation to size, power-weight ratio and power-displacement ratio, the modern .19 would top the bill. If development of the .15 International class continues, it seems likely that this size will eventually become the most for the least.

Of the development highlights (*Continued on page 49*)



Revolving cylinder liner in Vee block; dial indicator checks ovality. Clearance determined from piston, finally bore, actual displacement.



Stroke checked by measuring throw of crank pin. Stack of gauge blocks is accurate to the millionth of inch. used for setting up dial indicator.

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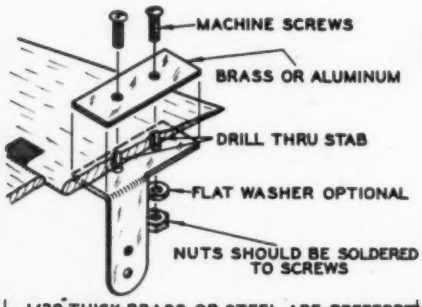
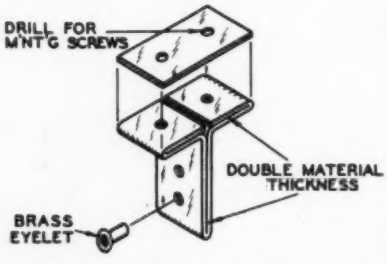
design detail



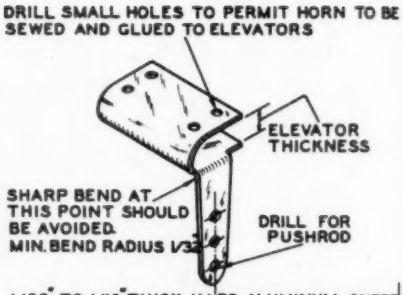
1/32" THICK BRASS OR STEEL ARE PREFERRED MAT'LS WITH 1/16" HARD ALUMINUM SHEET AS A SECOND CHOICE.

FIG. 1



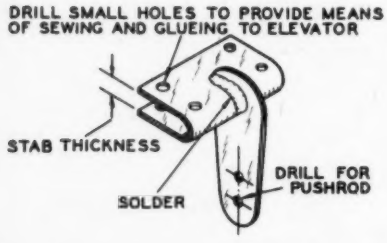
1/32" THICK HALF HARD ALUMINUM IS RECOMENDED MATERIAL WITH THIN SHEET BRASS AS SECOND CHOICE.

FIG. 2


DRILL SMALL HOLES TO PERMIT HORN TO BE SEWED AND GLUED TO ELEVATORS
ELEVATOR THICKNESS
SHARP BEND AT THIS POINT SHOULD BE AVOIDED. MIN. BEND RADIUS 1/32
DRILL FOR PUSHROD

1/32" TO 1/16" THICK HARD ALUMINUM SHEET IS PREFERRED MATERIAL.

FIG. 3



THIN SHEET BRASS OR TIN CAN METAL ARE SUGGESTED MATERIALS

FIG. 4

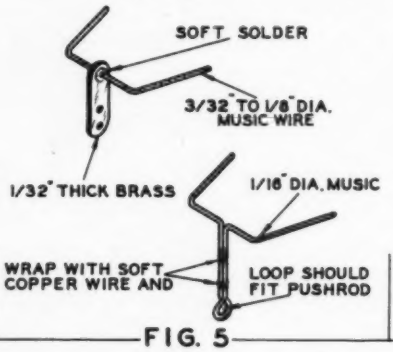
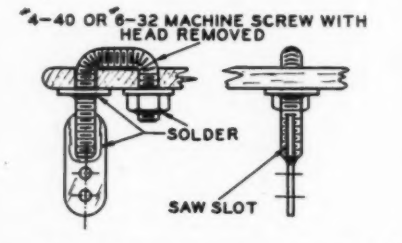


FIG. 5



1/32" TO 1/16" THICK BRASS TAB SHOULD BE SNUGLY FITTED IN SLOT AND SOLDERED IN PLACE.

FIG. 6

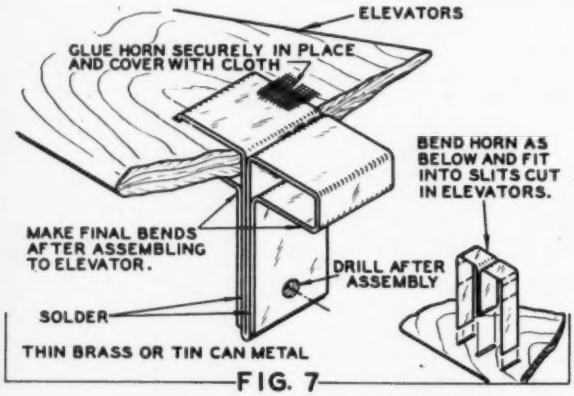

ELEVATORS
GLUE HORN SECURELY IN PLACE AND COVER WITH CLOTH
BEND HORN AS BELOW AND FIT INTO SLITS CUT IN ELEVATORS.
MAKE FINAL BENDS AFTER ASSEMBLING TO ELEVATOR.
DRILL AFTER ASSEMBLY
SOLDER
THIN BRASS OR TIN CAN METAL

FIG. 7

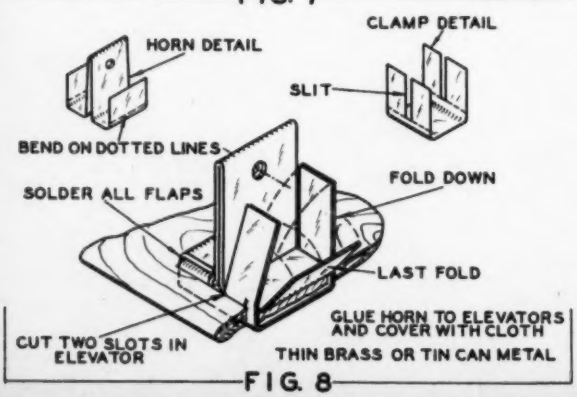


FIG. 8

Control Horns

By H. A. Williamson

The horn design shown in Fig. 1 because of its simplicity of construction is the most popular among the modeling fraternity for stunt and sport ships. Because of its design features, however, it doesn't lend itself as a choice for beauty models, nor has it the safety factors required for the larger speed jobs.

Another, but stronger, version of the first horn is shown in Fig. 2. The additional material thickness makes the use of aluminum a practical choice. Good design for the larger stunt jobs.

There are commercially available horns of the type shown in Fig. 3. This type is okay for most ships up to .29-powered jobs but not recommended for anything larger.

Fig. 4 shows a built-up horn design that is practically good for beauty and flying scale ships because of its symmetrical design. Strength of the unit is largely dependent upon the quality of the soldering job.

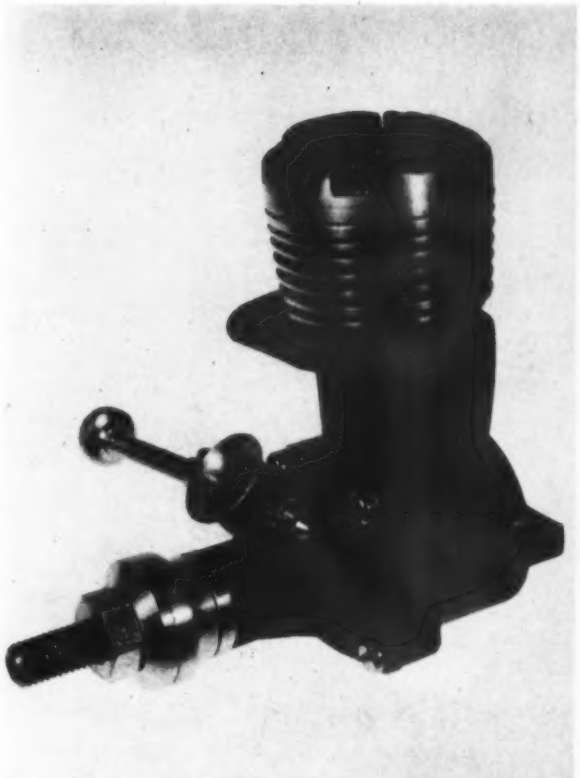
Two basically similar designs are illustrated in Fig. 5. The upper illustration shows a design that may be purchased ready-made in most hobby shops and is highly recommended for all ships except speed and jet models. The design in the lower picture is a little difficult to bend but gives terrific strength.

A simple bent screw and tab style is shown in Fig. 6. This one is easy for beginners to fabricate and is sufficiently rugged for most ships.

Two very good designs for speed jobs are shown in Figs. 7 and 8. Credit for Fig. 8 goes to Bob Peru, who has used it with complete success in all his speed ships. END

Import Review

By E. C. MARTIN



Among better Japanese-built engines is Enya .29. A good engine, it resembles McCoy Sportsman but is lighter and, consequently, less sturdy.

Another round-up of foreign engines currently offered on the American market. Other engines will be reported in occasional near-future issues.

▸ No country in the world can compete with America in the production of sound reliable machinery at low cost, but it is equally true that no one country has a monopoly on ingenuity and craftsmanship. For these two reasons we are seeing a growing volume of foreign goods entering the American market, model engines among them. Many people like something different and this demand is met by the foreign import, but, owing to American productive ability, these imports are seldom competitive in price and in no way is the domestic model industry threatened.

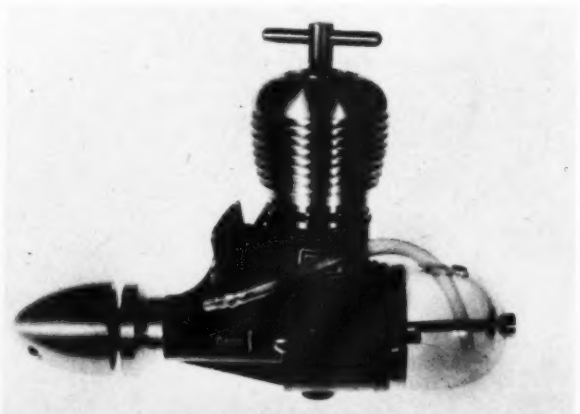
But if we disregard the price difference and assess products in terms of design and workmanship, there are many instances where the imports have something very definite to offer and the three engines covered here are a case in point. It is also a fact that a large proportion of unreliable "junk" finds its way from other countries and it is well to be cautious when buying imports.

Micromeccanica Saturno Super-Tigre G.20 Speed (Lapped Piston)

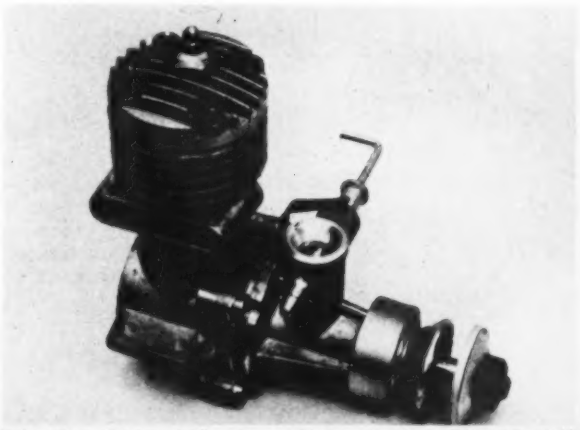
This is an engine that commands attention, as it is not only unique in its class by virtue of design, but also as the Class I FAI world record holder at 118.35 mph and, FAI regulations being what they are, this is no mean achievement.

Appearance, design and workmanship are first class and in general parallel American standards, but with several "extras" that set it apart. Three interchangeable plastic venturi inserts are supplied in different bore diameters for various applications and degrees of suction and the crankshaft runs in two ball bearings. Intake and shaft rotary valve design are an advance on anything we have seen so far and the finish and accuracy of machined surfaces is currently unequaled.

With a displacement of .15 cu. in. derived from a bore and stroke of 15 and 14 mm. respectively, the Super-Tigre conforms to the current tendency among small racing engines to get away from an extremely short stroke and it is interesting to note that it resembles the K & B .15 in this respect. It is also significant that virtually the same engine fitted with an aluminum piston and rings has slightly less performance. One inevitably compares the Super-Tigre with the K & B .15 in view of their similarity in both size and design essentials and, whereas the Italian engine definitely has an advantage with its excellently fitted ball bearings, the K & B makes it up with a more thoroughly developed piston and cylinder design. The Super-Tigre has sharp corners and edges on piston and port extremities and with its very large ports there is a definite tendency toward interference, which, while not serious, undoubtedly causes a performance bottleneck that could be avoided. Even so we would rate this engine as the best .15 racing engine in current production, discounting price, and it is manufactured by one of (*Continued on page 46*)



For smooth running, nicely turned out German BWM Diesel is of interest to the radio fraternity. Also marine version, other special equipment.



Italian Super-Tigre series has deserved international reputation. The G.20 speed, here shown, is comparable to the K & B, FAI kingpin engine.

The Engine

(*Continued from page* 18)

of port (see drawings).

13. Don't attempt to balance crankshaft because we have a lighter piston and rod now, which work out very well at the high revs. this motor will put out.

14. Open up bottom of venturi to match crankshaft port. Be careful not to touch port sides of venturi or where needle valve body goes. Put high polish on inside of venturi.

15. Remove all burrs and sharp edges on bottom bypass in engine block. Then put high polish on inside of block.

16. Lap in cylinder head to sleeve.

17. Reassemble engine with piston at the bottom center, as in step No. 3. If piston is below bottom of exhaust port, remove sleeve and file lower edge of exhaust port until it is flush with piston. This will permit smooth exhaust of burnt fuel.

18. Wipe free of all metal filings. Be sure inside of piston and sleeve are clean and without burrs. Wash all parts.

19. Oil all parts (3-in-1 oil) and reassemble engine. Be sure you line up the sleeve intake port with piston baffle.

20. For breaking in, follow factory recommendations, except to add 3/4 oz. of AAA degummed castor oil to a pint of your favorite fuel. After engine is broken in, reduce the oil to 1/2 oz. to each pint of stock fuel. When team racing, I use the following mixtures of fuels: for the acceleration races, I use one pint Power Mist Infant Glo, 1/2 oz. AAA degummed castor oil, 1/2 teaspoon concentrated Wynn Friction Prove oil, 1 oz. Nitro Benzine (be careful of this stuff!).

For the long races I use Power Mist Hi Thrust and Power Mist Infant Glo in equal portions with same oil, etc., as mentioned. On wet days ease off on the Nitro Benzine. After each race put a few drops of 3-in-1 oil in venturi and exhaust.

I never used a restrictor in the venturi on this motor, because of the very good fuel economy—38-47 laps per tank—at speeds between 90-98 mph. Here in the East we have some real hot team racers. It wouldn't pay to be floating around at 65 mph with a restrictor—not when you have a hot motor capable of pit stops under 10 seconds, as most of these reworked Foxes are. Learn the habits of your motor. Some start with no forcing of fuel into venturi, others may take one pump of fuel. When motor is cold, hold piston on compression and put a few drops in exhaust port.

As soon as you have finished a race, oil your motor and wipe off plane. Before the long race, be sure to check motor base bolts. About five minutes before you are to race, pre-run your engine for 15 seconds to remove oil from glow plug; also, to warm block for a quicker start at the starting line.

When setting the needle valve on this Fox, I suggest you bring motor to highest peak revs, then open needle valve two more notches, but never on lean side. That's all there is—there ain't no mo'. Good luck and good clean racing!

To get the best power and fuel economy, use either a 9x6 or 7 pitch Tornado prop. Remember this motor has advanced timing, so don't overload with a big prop. END

Winning Team

(*Continued from page* 18)

1/2 in. at center to 1/4 in. at tips.

When laying out wing, remember the outboard side is 1-1/4 in. shorter than the inboard side. Groove inboard top side of wing and cement in 1/8 in. tubing for lead-out wires. Cement 1/8 in. plywood plate to top of wing and 1/16 in. plywood plate to bottom side of wing for bellcrank support. Cut down a 3 in. Veco bellcrank and turn down ends 1/8 in. Drill hole through plywood supports, then gouge out wing for smooth operation of bellcrank. Install lead-out wires; cover entire wing with nylon. Install wing; finish planking over front section. Use a small bush where shut-off reset wire comes through planking.

Mark and cut out the rudder from 1/16 in. plywood and install so that the front portion is 1/16 in. off-center at former No. 6.

The stabilizer is made from 1/8 in. medium hard balsa and the elevator from 1/8 in. plywood, with a piece of balsa to fair out the rear of the elevator. Cut two pieces of nylon full size of stab and elevator and then mark off where hinge falls and sew along this line with a very close stitch. Install the stabilizer, rudder, 1/16 in. dia. pushrod and 1/32 in. dia. shut-off pushrod. Make sure pushrods operate smoothly and make final adjustments.

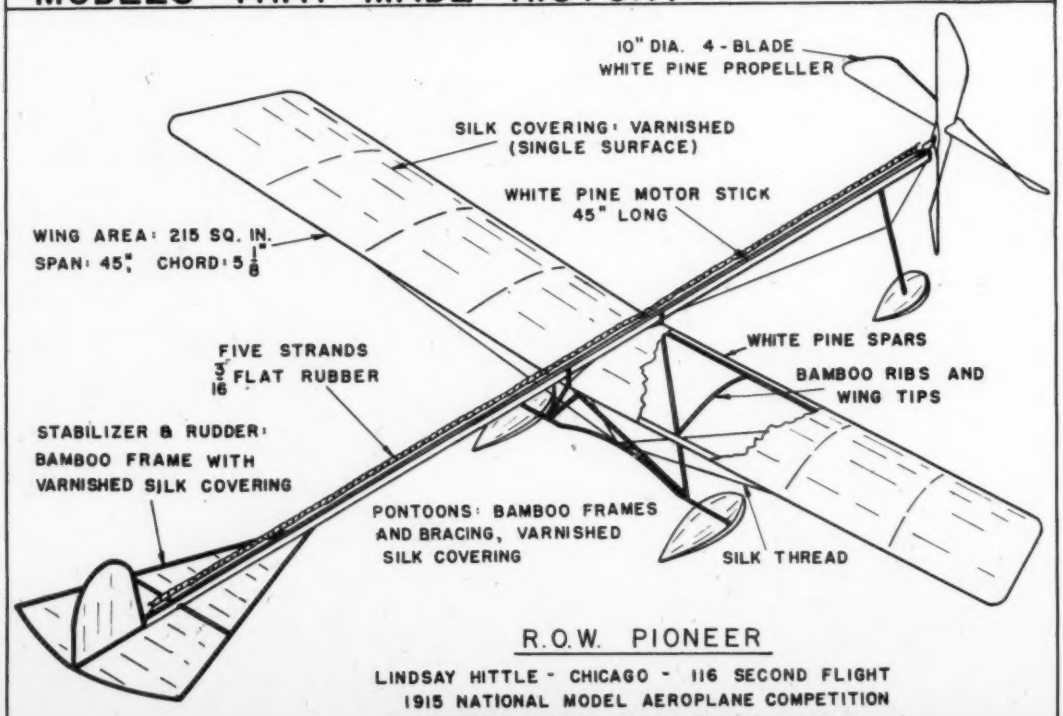
Complete planking of fuselage top section. Bend to shape 1/16 dia. tail-skid and make tail-skid mounting plate from 1/8 in. plywood. Solder two 4-40 nuts on piece of tin plate and cement to plywood mount. Plank lower center section of fuselage, then cement tail-skid platform in place. Bolt tail-skid in place and complete planking bottom section of fuselage. Fit balsa under landing gear plate, gouge out air slot and then sand fuselage smooth. Brush on two coats of clear butyrate dope, sand down with extra fine grade sandpaper and cover entire fuselage with nylon.

Make up cowl, using 1/4 in. medium hard balsa for the sides and bottom. Make front piece out of 1-1/4 x 1-1/2 in. balsa and fit snugly around top of venturi to create a supercharger effect. Cover cowl with nylon and dope plane a color that can be seen easily in late afternoons.

Make anti-siphon vent cover from solid piece of alum or shape from a piece of tin stock. The wire hinge is turned in under planking and double cemented. Install pilot and fit a cut-down P-51 canopy.

Those who weren't at the Nats may be wondering what time record was turned in by the Rambler. In the half-lap acceleration, 2:8; seven laps from take-off, 0:20:4 (88.2 mph); 21 laps, 0:57:6 (90.3 mph); 70 laps, 3:53:5 (average 78.2 mph); 140 laps, 8:29:3 (average 70.2 mph). Pit stops at 38, 82 and 115 laps. On the second pit stop, we broke a jack wire, causing us to lose 30 seconds. If this hadn't happened, we might have finished with a score near 7:58. END

MODELS THAT MADE HISTORY BY J.L. MACKENZIE



R.O.W. PIONEER

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FORD TRI-MOTOR

SCALE: 1/4"=1'—0"

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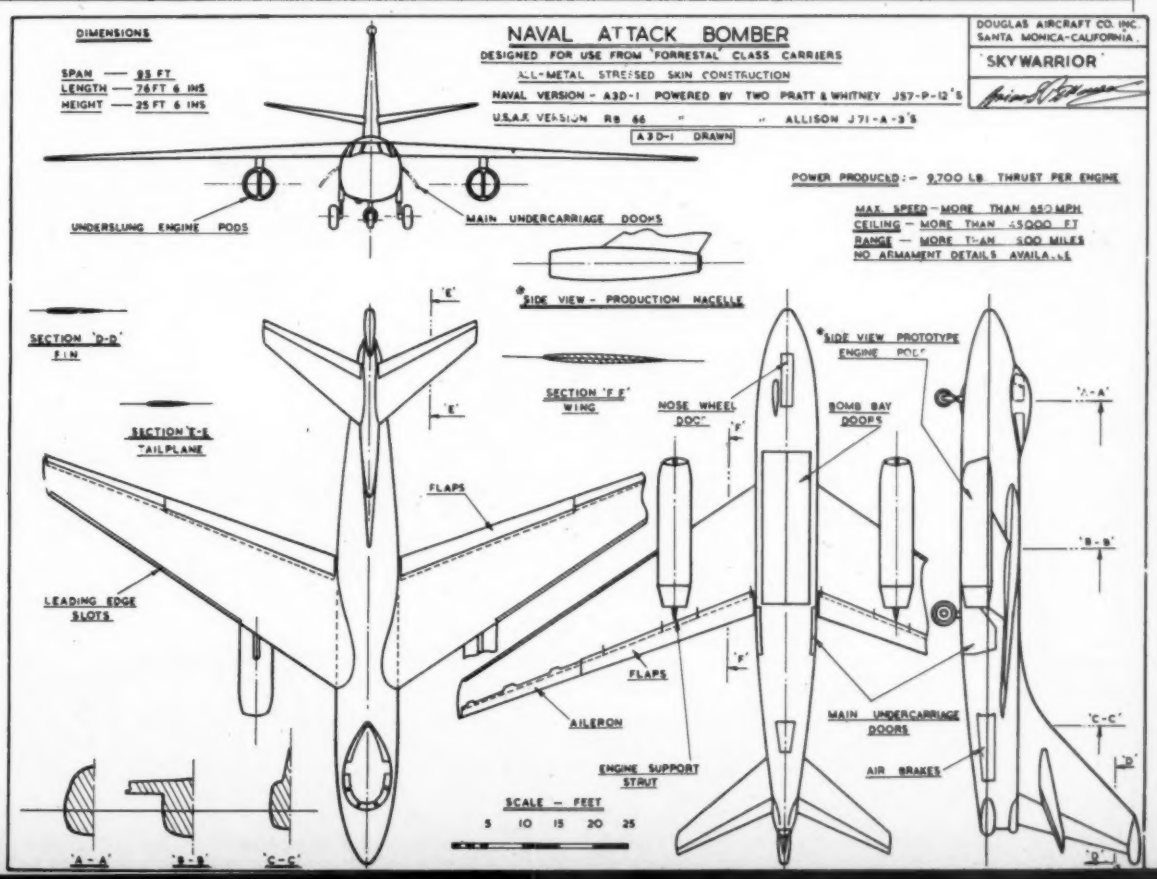

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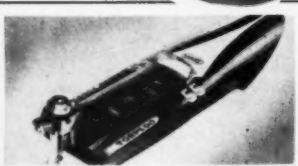

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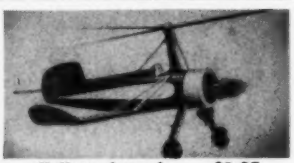

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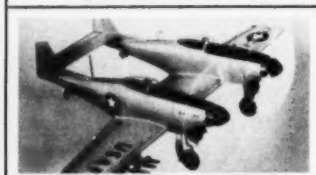

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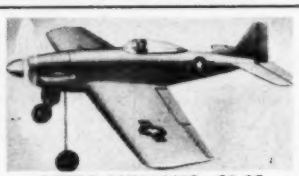

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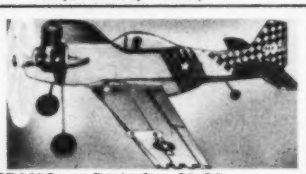

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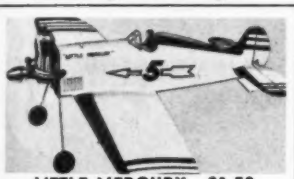

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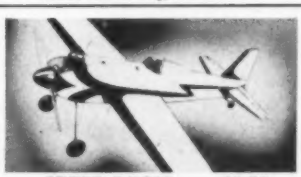

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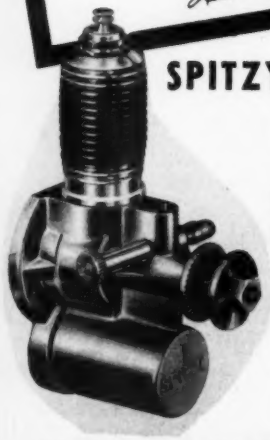

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FOREIGN NOTES

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Another RC Duration Record

The new world RC duration record (subject to ratification by the FAI), set up by Britain's Hilton L. O'Heffernan, is particularly notable for the wide margin by which it exceeds the previous records which have been held alternately by Russian and British modelers over the past two years. The flight lasted 2 hrs. 31 min. 17 sec. and was then terminated only because of failing light. This compares with a previous record time of 1 hr. 40 min. 35 sec. by Geoff. Pike.

The model used by Hilton O'Heffernan was of his own design, as was the receiver. The model, known as the "Sky Sedan" and built expressly for the RC record, had a 60 in. span, thick-section wing of 10 in. chord and a length of 46 in. Loaded weight was some 3-3/4 lb., which says much for the .08 cu. in. Mills 1.3 Diesel used for power. A 10 x 6 in. plastic prop was employed to give a suitable balance between economical operation and adequate thrust.

The transmitter used was a home-built original three-tube unit, crystal controlled (crystal control is not a legal requirement in Britain) with a 1/4 wave vertical antenna and operated from a 12-volt automobile battery and vibrator.

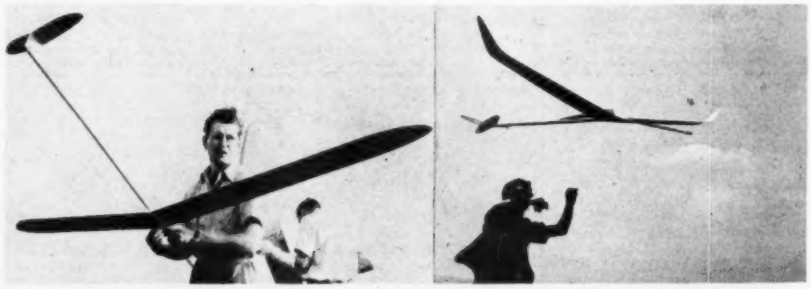
Modeling in Portuguese East Africa

Quite a number of the letters we receive in response to this column come from the more remote centers of model building and from countries which do not figure in the international contest lists. Naturally, our correspondents in these places seldom have any startling technical advances to show us but, nevertheless, we are glad to hear of their activities. There is everything to be said for spreading the model movement into every corner of the globe.

One such enthusiast is Luciano Magalhaes of Beira, Portuguese East Africa, who has been building models for eight years, a MAN reader for seven of them, and has now begun to interest the local youth in model flying by importing some elementary glider and rubber models from South Africa. Our correspondent has also imported engines and radio equipment from England and sends MAN pictures of a 52 in. Piper Cub, ED .12 cu. in. Diesel powered, and of his 82 in. Radio-Queen powered by a .21 cu. in. ED Hunter disc-valve Diesel.

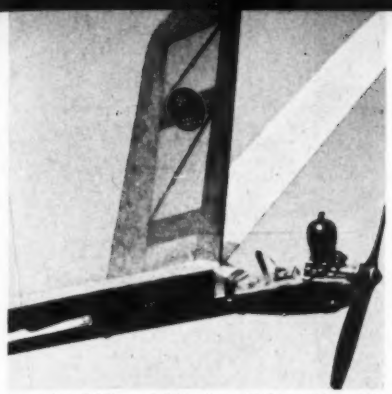
One-way Actuator and Motor Cut-out

We first mentioned the Ruddermag RC actuator in December. As then explained, this gadget is a magnetic actuator, not an escapement, and dispenses with a rubber motor. It also incorporates an automatic motor cut-out, a feature which has made a lot of people ask how it works.



Left, above—Ossi Czepa's ultra-high aspect radio Nordic type glider. Right—A highly unorthodox Nordic configuration by G. Skalla. Towline design is a science in the Balkans. Czepa world renowned.

Left, above—Ruddermag is a one-way actuator and motor cut-out from England. Plane has circle one way, rudder to go opposite. Right—Typhoon escapement, Holland. Resembles a Berkeley unit.



Czepa's odd forward fin free flight, a Mac .09 Diesel. Italian idea to prevent spiral dives.

The actuator weighs only 7/8 oz. and operates on 1-1/2-4-1/2 volts. It consists of a base 1-1/4 x 7/8 in., on which is mounted an electro-magnet. Alongside is a vertical spindle to which is attached a flat plate armature so that, when the magnet is energized, the plate is pulled in, rotating the spindle and an arm at the top which is coupled to the rudder. On the outside of the plate is a small cork pad which covers the end of a small pipe.

A sealed fuel tank with two vents is used. One vent pipe is connected to the pipe of the actuator by a long length of Neoprene tubing. The other vent is plugged after filling the tank. By using a suitable bore and length of Neoprene between actuator and tank, the motor is allowed to run for about 15 seconds before the negative pressure in the tank, created by the falling fuel level, causes the motor to starve out and stop. Every time a signal is sent to turn the model, however, the vent pipe is, of course, uncovered, thus keeping the motor going.

In practice the idea works well since the one-way-only rudder control, working against a pre-set bias, needs frequent signals to keep the model on an even course, but, should the receiver (or transmitter) fail, a flyaway is automatically prevented. On the other hand, should one wish to bring the model down, it is merely allowed to circle in the signal-off position until the motor stops, after which one can again use the rudder to guide it down to the desired spot. The light weight and simplicity of the system, when combined with small equipment like the Super-Aerotrol, should make it particularly adaptable to small scale models as well as to beginners' use.

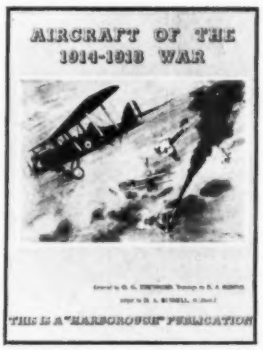
Further Improvements to Popular Mach-1 Diesel

The high-performance German Webra Mach-1 Diesel has lately undergone a minor face-lifting. Crankcase castings are now sand-blasted to improve appearance, and screws, needle-valves, compression-levers, etc., are blackened. The needle, with which some early purchasers experienced trouble through fractures resulting from vibration, has been modified. The manufacturers are currently experimenting with reed valves for the Mach-1 and a new .40 cu. in. glow plug job is also on the drawing board.

Enter the Model Space-Ship

Shades of Buck Rogers! It had to happen! Space helmets and atomic-disintegrators having displaced cowboy hats and six-guns, it was inevitable that someone would have to come to the rescue of our eager youth to whom propeller-driven jobs are as dead as Marley and conventional jets only slightly less obsolete. The only surprising thing about it is that the rescuer is none other than Bert Judge, former winner (Detroit, 1936) of the contest for the soberest of all sober model airplane exponents, the Wakefield. Now follows a pause while old-timers furtively wipe away a tear. (*Continued on page 52*)

"AIRCRAFT OF THE 1914-1918 WAR"



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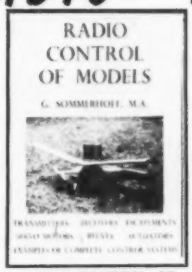

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(*Continued from page 6*)

iously, and this applies to you group scribes all over the world, MAN will gladly tie in important news items with the Foreign Notes column.

• • •

▸ Having released proposed PAA-Load rules, only to alter them drastically within 30 days, Pan American now keeps its fingers crossed. "After mailing this to you, I'm going to get out of town!" announces George Gardner, enclosing the new PAA-Load Endurance Event rules for controlline models. (It is rumored George really is flying one-man combat on a barge moored in the middle of the Zambesi River.) Before packing his trusty U-Reeley, George was heard to comment, "We got the payload too heavy and had to back down. The load was given as an 8 oz. dummy with 2-1/2 lb. of cargo. This now will be an 8 oz. dummy, plus 1-1/2 lb. of cargo. Also, line length has been reduced to 52-1/2 ft.

• • •

▸ New rules: Controlline endurance and proto speed (fixed gear, cowled engine except for fins, minimum span 20 in., timed for one mile); towlines reduced to 164 ft.; indoor simple stick, non-microfilm covering; two classes in RC, new pattern combining both precision and stunt; .300 top in team, pit stops required all but 21 and 35 lap races, .012 wires; three inverted laps in stunt, allowable time up to six minutes, but eight over-all, triangular loop and outside square loop added, definite entry into eights; max landing points, 20, bonus for spot; multi-engine scale on Half-A engines, 35 ft. lines; combat flight unofficial if terminated through no fault of contestant, gets another attempt if flight lasted less than minute, flight official if a score; free flight scale open to all classes piston engines, or Jetex.

• • •

▸ Figured how to get back into a box all the bits and pieces of a kit. Just put them back, one by one, starting with the last one taken out. Occasion for this brilliant observation is a Sterling Chris Craft Monterey Outboard Express Cruiser we're thinking of tossing together for Allyn or Atwood outboards we'd like to try out. Maybe see, too, what the RC'ers are doing with boats. Sterling, incidentally, have built themselves a nice business in boats. Won't rave about the fact that the kit is highly prefabbed because you know all about prefabrication. However, there's some mighty sharp (literally) die-cutting in this one, even to the plywood main bulkhead. Maybe a boat gives us a different point of view but, if you want to know something, we like it die-cut. Somehow, the less cutting out, the better we like it. Now why should a keel be different from a trailing edge, or a bulkhead from a wing rib? Perhaps, a fellow should know how to build from raw materials in order to build original designs. So maybe the argument isn't that people are forgetting how to build because of die-cutting, but that they don't have the urge to create originals. The same thing, you say? When was the last time *you* made an original from one of the full size plans from this magazine? Anyway, this 21 in. Monterey has a huge plan that shows four optional ways in which to install radio equipment; interesting point is the tiller bar arrangement for steering the outboard.

Also, the Cessna 180 by Sterling also copiously die-cut, both ply and balsa. Sterling stole a march with their scale Piper Tri-Pacer, but that was a .19-powered five-footer. The Cessna spans 45 in., is suited especially to Half-A engines. Spring steel Cessna type gear is an inducement. Scale fans will rush this one; should go well as a free flight, too. Also on the list of things to build is a Scientific Guided Missile. Curious as to what you'd get in a low cost profile ukie kit. Not bad, not bad. Suspect Walter Musciano worked this one up. It is

(*Continued on page 39*)

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right: Right power (and how many times have we modelers seen the statement, "For Infants to OK Twins" on a box?), right size, right wood, clever prefabrication. Like it because it is simple way to get beginner into the air with successful plane. Around our place that's important. Papa hasn't been agin' prefabs since he had to make everything the kids brought home from the store—some he couldn't build! The Guided Missile can be assembled "in the air" out of the box. Should work well on an .09 at the low limit and go like sixty with the .19 at the upper limit. Cub or K & B .15 would look good.

Just built A-J's Fire Bee. This is the little ukie job that looks like the North American T-28 trainer. It's all wood, profile, with a three-wheel gear, a novelty and experience in itself. The big feature is the two-speed Walker Firecracker engine. With Walker, the ingenious is commonplace, but brother, this engine control is a dilly, regardless. A simple venturi clapper is attached to barlike exhaust stack restrictor which revolves, between open and shut, as the clapper moves from open to closed position. The device is actuated by a small rubber bellows that attaches to a crankcase bolt and to which an air line connects to a syringe-type bulb held in the hand. Squeeze the bulb and the venturi and stack are uncovered for high speed and vice versa. The bulb can be held inside the hand that grasps the control handle. Engine response is fast. You get "proportionate" engine control, varying the pressure when squeezing the bulb.

(*Continued on page* 40)

For The RC Fan

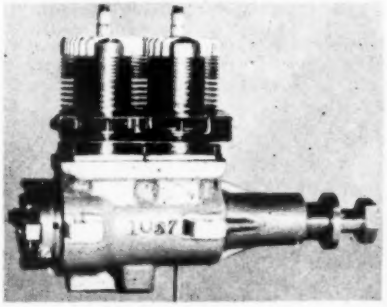
(*Continued from page* 25)

Should it be necessary to adjust the contact points on the compound escapement, adjust them with a sharp tool as shown in the sketch. *Do not attempt to bend them with pliers.* Adjust only as a last resort and then only a little at a time, checking often so as not to overdo it.

After winding your escapement rubber, it is good practice to release a few turns by operating the escapement without engine running. If it works with no help from engine vibration, you can be sure it will function in the air. Don't fly unless *everything* works perfectly on the ground.

Often, uncontrolled spiral dives are blamed on relay sticking or escapement hang-up, when actually there may be aerodynamic causes. To satisfy yourself that the escapement can handle the air loads of the control surface, try the following. With wing removed and receiver turned on, have an assistant sit on the front fender of your auto and hold the fuselage with tail assembly out away from the disturbed air around the hood. Turn on transmitter on seat next to driver and drive at varying speeds while keying control surface. If control is solid up to 40 mph, it is unlikely you will encounter air loads in excess of this.

After these checks and tests, you should not have to touch the escapement, except to replace rubber drive, for many hundreds of flights. END



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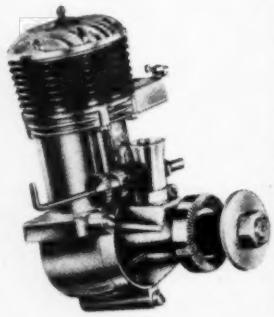

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MAN at Work

(*Continued from page 39*)

▸ It is excellent strategy when you can make model flying a benefit to the community. When townspeople see tangible advantages, you'd be surprised how little noise an engine makes! There are many ways to fit modeling into the community, but we have heard of none more effective than a plan worked up by the Cincinnati Control Liners, Inc.

After reading about a model flying circus in Michigan (MAN, Apr. '53), the 30 members of the Zinzinnati club organized their own circus in 1952. At first, they had no public advertising. Just handbills printed gratis by one of the members. Static—non-flying to you, Buster — displays included finished models, models under construction, radio control, the GE Electric-Gas turbine display and a torn-down model engine. Five-cent gliders were given away to the children. Coca-cola sales paid for the gliders. GE donated jet comic books for the kiddies. About 800 people saw the show.

A bigger show planned for the following year was washed out one week but, despite the handicap of a rain date performance, 1,500 people came in. Put on at Lunken Airport, the show benefited only from a brief bit in one of the local papers. In 1954 the boys came out fighting. By this time a Congress of clubs (five) had been formed. The Control Liners meanwhile had grown to more than 50 members. The Third Annual Model Air Show really was promoted. Seven Corsairs of the Naval Reserve Unit at Columbus, Ohio, helped the Congress achieve the goal of proving to the public that a model club could provide an interesting show of both big and little planes. Two papers carried follow-up stories. The local television station got into the act, bringing the show to 250,000 viewers. Five-thousand spectators saw the actual performance. Trailmobile, Inc. sent two flat bed trucks for take-off platforms for Dynajets and for display tables.

Later in the year the Control Liners put on an Emergency Polio Drive air show at the Model Field at Lunken Airport. A circular saw and a Barnstormer kit were raffled off. Near-tornado winds and rain almost washed the show out after an hour's flying, but even so, TV stations devoted 30 minutes' time. Though booths were blown over by the storm, planes wrecked, the show finally went on. For 1955 air show, big things are expected. Both GE and the Navy have promised better static and aerial displays. The AF may send over two helicopters. (What good is model building!) The Cincy boys did all this for altruistic purposes. The good will they created as a result is an indication of what clubs can do about local flying problems—just look alive!

Thanks, Glenn E. Stucker (and the Cincy modelers) for this inspiring dope.

• • •

▸ During a recent visit of the Sixth Fleet to Valencia, Spain, an International model airplane meet was held between the U.S.S. Coral Sea "Knucklebusters" and the Agrupacion Levantina Aeromodelismo of Valencia. As we get the story from Capt. E. J. Burke, Commanding Officer, U.S.S. Des Moines (and thanks for the pix, Captain), about 40 contestants attracted numerous spectators to the local airport. The Americans excelled in stunt, but the Spaniards were tops in team racing. "Though less powerful than American reciprocating engines, the quick starting Spanish Diesels were well adapted to this type of racing," reads the report. Outstanding was the feeling of friendship and understanding that resulted from the odd contest... And colored Silkspan is back. White has always been available but the colored variety went to war and never came back. Post-war demand was too small for the necessary minimum runs. Pre-

MAN at Work

(*Continued from page 40*)

sumably, built-up modeling is coming back! ...MAN doesn't prepare book reports, but must comment on the magnificent *Aircraft of the 1914-18 War* (Harleyford Publications, Harleyford, Marlow, Bucks, England). The $11.95 price is reasonable, for 126 large pages, printed on glossy stock, include numerous page-size three-views, and fold-in larger sheets of plans for the bigger aircraft. Numerous pictures, many of them strange to us, and much well organized data make this a must for collectors, scale fans and others interested in the period...New club, Milan (Mich.) Aeromodelers, have new paper, same name. Kiwanis Club, Milan, will sponsor. Milan Truck Lines donated their office for club room. The Milan Lumber Co. donated wood for clubroom work benches. Contact Dave's Hobby Service, 148 W. Main St., Milan. And at this point, we fly out of sight. See you next month.

END

Stunt Wing

(*Continued from page 12*)

used, and cement nuts in place. Carve out the nose block and cement in place. Add the fuselage top, wing gussets and fillets. Cover the entire ship with silk, which is necessary for strength.

The original model was finished with six coats of nitrate dope, thinned to a nice brushing consistency. Sand with finishing paper between the first three coats. Next, apply three coats of butyrate dope and trim to personal taste. The original was solid black with a white trim around the canopy.

The original was flown with a Fox .35 on 65-ft., .010 lines, with a 10-5 Tornado propeller.

END

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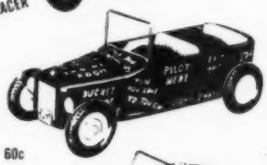

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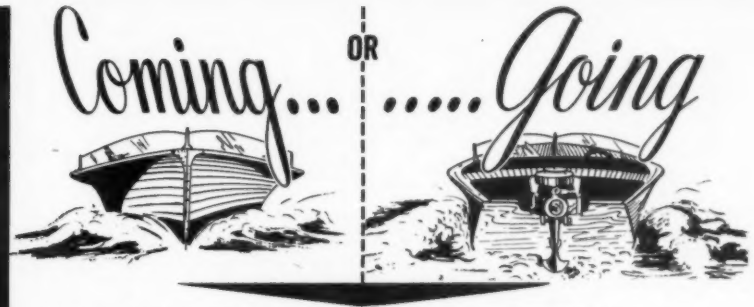

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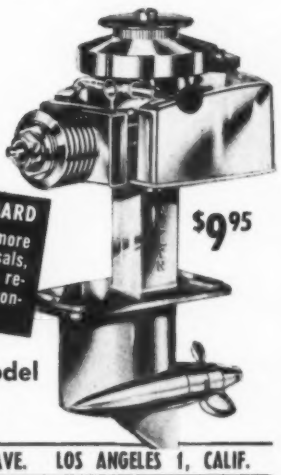

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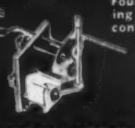

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Actual photograph of model built from kit. Manufactured from drawings supplied by the Chris-Craft factory.

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1. THERMAL HOPPER .049—National Record Holder: ½A Free Flight, ½A Speed, Clipper Cargo. $6.95
2. SPACE BUG .049 — Hottest stunt Engine in ½A! Ready to fly, simple to operate, easy to start. $6.95
3. RACING FUEL and GLOW FUEL by Thimble Drome — Make any engine run faster, better! Racing Fuel 60¢ ½ pt. $1.10 pt. Glow Fuel 50¢ ½ pt. 90¢ pt.
Champions choose the engines and fuels that come through in the clutch! When you need it most, Thimble-Drome performance always stands out in the toughest competition. For that head start in every contest—for an easy, sure start every time—choose Thimble-Drome!
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As much as
2000 EXTRA RPM!
Supercharged performance ... that's what you get when you have Gold Seal 2000 Racing Fuel in your engine! Recommended by Bill Atwood, noted designer and manufacturer of model engines, and scores of others who want top performance.
EAST TO WEST
IT OUTPERFORMS
THE REST!
OHLSSON
Gold Seal
2000 RACING
OHLSSON
MFG. CO.
LONG BEACH, CALIFORNIA

Radio Control News

(*Continued from page 23*)

of oscillation." With the help of Pete Bliss, who scratched off the etched circuit between the antenna connection and the plate connection, a regular antenna coil was added as per the original MAN article in February, 1953. This solved the loading problem and it may be the answer to users of N.A. receivers who have tried the new long life RK-61 without too much success. The antenna coil makes the difference.

With interest in printed and etched circuitry growing in all fields, we'd like to know your feelings on this subject. Two short articles have appeared in MAN so far and we'll give you more tips on making and designing them, if you're really interested. Drop a card to MAN, especially clubs, and let us know if you'd be interested in methods for making etched circuits in quantity.

According to Frank P. Schmidt, a gadget of immense help to your batteries is a little pocket warmer, obtainable at most hardware stores. Weighing only 2-1/2 oz., it gives a terrific amount of heat for 12 hours with one tablespoonful of white gas or plain lighter fluid and can be tucked in with the batteries of the ship.

New Items

Gyro Electronics Co. of 325 Canal St., New York City, offers a six-reed relay. This is the largest number of controls to be made available, through the use of a reed relay, to modelers in this country. The price of $14.95 is exceptionally low for an item such as this. A matching modulator to convert any transmitter to multi-tone control may also be had, in kit form, for $8.45, or built and tested for $14.95. To round out the above combination, Gyro has a Joy Stick control box which makes four contacts when moved forward, back, left or right. Why push buttons when you can operate from a stick for only $2.95?

Control Research, Box 9, Hampton, Va. has a new line of sub-miniature electrolytic capacitors. A .25mf-50V unit is no larger than a 1/2W resistor, while a 3mf-50V unit is comparable in size to a 1W resistor. Prices for these quality capacitors are about 85¢. Have you been looking for a seven-pin plug to fit the standard seven-pin miniature tube socket? Look no further, for you may obtain such a plug, with a shield, from Control Research for only 45¢.

Quite a few builders write in and ask where they might get replacement coils for Sigma relays. Electronic Specialties has 5,000, 8,000 and 10,000-ohm Sigma coils for $1.25. They also carry a most complete line of relays, both sensitive and regular, for RC work.

Lomar Co. of Willow Grove, Pa., has a printed circuit kit for $4.95 which might be of interest to those desiring to make their own printed or etched circuits. We have not seen this kit yet but everything is included in it and more information may be had by writing to the company. More printed circuit equipment is planned in future issues, so it might be good to check into it.

For the more serious minded designer and builder, the Centralab printed circuit amplifier unit No. PC-200, Type AMPEC, is a sub-miniature assembly measuring 1-1/4 x 1-1/8 x .340 in. Using two CX512AX tubes and one CK525AX tube, this unit has been reworked by various builders to operate a reed bank or a regular tone-actuated receiver. They may be obtained through most radio supply houses for about $9.00, less tubes. Centralab also puts out a variety of printed circuit plates with various combinations of printed resistors and capacitors. These PEC units (Printed Electronic Circuits) are being used widely in radio and television applications and we believe they will find uses in RC work as more tone circuits come into being.

Club News

A. R. Peterson of Pete's Hobby Shop, Kansas City, Mo. writes in to tell us of the formation of the KC/RC Association. This group has the distinction of following the DC/RC group in Washington, D. C. in choosing a harmonious name for their group. The KC/RC Association is open to anyone interested in *any* phase of radio control work and the first meeting drew 24 persons. RC boat contests have been held, using a similar pattern and point scoring system as set down by the California boys. Considerable RC flying has been done by this group and we hope they keep it up and "look-alive in '55."

George DeLaMater, 8618 Belcrest Lane, St. John, Mo., who gave us the unusual two-tube receiver circuit in the September, 1954 issue of MAN, was dissatisfied with being at the tail end of the flying line on 27 mc, at contests and sport flying events. So he proceeded to obtain an amateur license, WOWZM, and then was able to set things rolling, or rather spinning, on 21.174 mc. Now he has no interference from the 27 mc boys and can also claim a long distance control record of 1,600 miles. Fine? Well, not exactly, because on November 14, after a spin-in, he plugged a set of headphones into his receiver and found that a W6 ham on the West Coast was over-riding his signal while talking to a W3 on the East Coast. During his period of being flabbergasted, he claims he also heard Spanish and Oriental voices creeping in. In fact the whole thing was so creepy he left the 15 meter band and went upstairs to 220 mc. For those fliers with an amateur license, 220 mc is a way out for getting more interference-free flights in the air. Incidentally, gas tubes are not usable as detectors or RF amplifiers at frequencies over 100 mc, so such receivers will probably work out best if used with audio tones.

Two photos show what is at present the ultimate in high performance RC planes. One, from the West Coast, shows E. L. Rockwood's 6-ft. Cub with an Orwick .29 two-speed ignition in the foreground and Alex Schneider's two-speed ignition, Fox-powered 6-ft. Cub. As we've mentioned before, the California boys go for scale type jobs and they really make 'em fly.

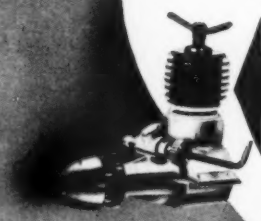
These ships, with five-channel Rockwood equipment, are capable of both inside and outside loops, touch and go landings and extremely beautiful take-offs. Almost 3,000 miles away, on the East Coast, Hal deBolt's latest creation (in other photo) is a 5-1/2 ft. symmetrical airfoil job with a five-channel Schmidt unit and is powered by a Fox .25. Its 6 lb. weight figures out to a wing loading of 20 oz./sq. ft. and the plane has the following features: four-wheel gear and a steerable tail wheel, 100 per cent balanced elevators, which are also trimmable and, of course, a symmetrical airfoil which was chosen to facilitate inverted flying. Needless to say, multi-servos are used on all controls of this 40 mph model. And now we'll probably have a controversy arising as to whether or not symmetrical airfoils are needed for stunt and inverted flying. The West Coast boys stick to regular airfoils and are still able to perform outside loops. However, each group has its own ideas and fine points and only time will tell.

From Ron Wilson, 21 Hurding St., Flowery Field, Hyde, Nr. Manchester, England, is an ardent modeler, who will be ready this coming summer to try for the duration, altitude and long distance records. He has made altitude flights of from 3,500 to 11,650 ft. and by the time this is in print will have made an attempt to fly from Holyhead to Ireland by RC, a distance of 50 miles. His goal for the duration record is four hours and at one time was airborne, over 45 miles of water, for one hour 15 minutes. Just as U-control fliers gave ground to straight speed flying by branching out to team racing, etc., the radio control boys

(*Continued on page* 46)

GERMANY'S NEWEST

Taifun - DIESEL ENGINES



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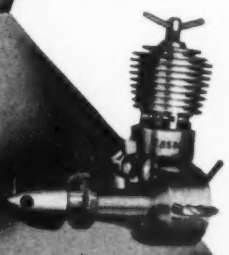
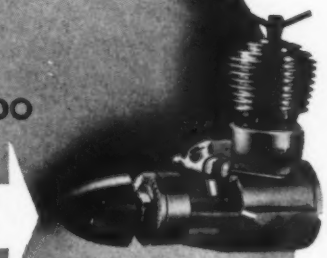
Small in Size - Big in Power. Easy starting, smooth running, unsurpassed for 1/2 A Free Flight, Control Line and Radio Control
Capacity 0.06 cu. inches
0.98 cu. cms.
Weight 2 ozs.
Output 0.14 HP
Speed 17000 RPM
Order Nr. 1398 $ 10.50



Taifun - RASANT

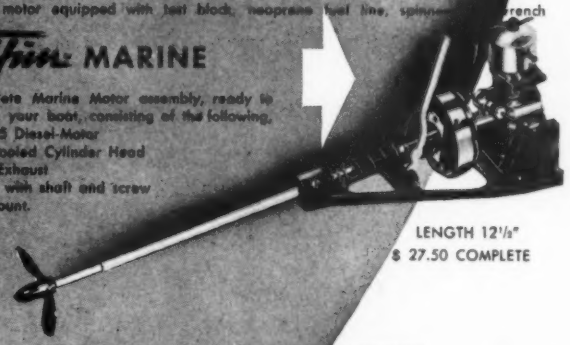
High performance Diesel Engine for every contest, suitable for Free Flight, Control Line and Radio Control
Whirl-Free overflow channels afford smooth and troublefree running
Capacity 0.15 cu. inches
2.46 cu. cms.
Weight 3 ozs.
Output 0.23 HP
Speed 12000 RPM
Order No. 1388 $ 11.95



Taifun - TORNADO

Germany's newest Racing Motor for: speed endurance distance efficiency ideally suited for all racing models as well as free flight and Radio Controls.
Capacity 0.15 cu. inches
2.47 cu. cms.
Weight 4½ ozs.
Output over ½ HP
Speed 17000 RPM
Order No. 1399 $ 13.95

Each motor equipped with test block, neoprene fuel line, spinner ... wrench



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Rasant 15 Diesel-Motor
Water Cooled Cylinder Head
Special Exhaust
Flywheel with shaft and screw
Motor Mount.

LENGTH 12½"
$ 27.50 COMPLETE

SEND 3¢ STAMP FOR ILLUSTRATED CATALOG.

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NEW! F-100 SUPER SABRE

COMPLETE WITH JETEX® #35 "ATOM" ENGINE and FUEL $1.95

An entirely new semi-scale model of the USAF's most outstanding production fighter. This Jetex model has the thrilling lines and spectacular performance of the supersonic prototype. For unbeatable flying fun, model the Jetex Super Sabre.

COMPLETE WITH ENGINE AND FUEL.

Everything you need is included in the kit. All die-cut balsa parts—quickly, easily assembled. Complete plans, decals, even cement! And the power-packed Jetex #35 "Atom" engine with fuel. Only $1.95

CONVAIR F-102

COMPLETE WITH #50B JET ENGINE and FUEL $1.95

Recently introduced by Jetex, this outstanding model is soaring to a new high in popularity with modellers who thrill to the high speed, high performance characteristics of this great delta wing fighter.

All die-cut balsa wood construction. Easy to build from detailed plans. Includes decals. COMPLETE WITH JETEX #50B ENGINE and FUEL. Only $1.95

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HOT SHOT POWER PAC

Complete with Charger only $6.95 F.O.B. Kenosha

A Storage Battery Engineered for model airplane starting. 4" x 6½" x 6½" high. Compartment to hold 1 Pt. gas can, tools, props. Handy handle, hard rubber case, 5 full plates. 2 Volt, 1 amp. for 30 hrs. 5 Lb.

You can always have a Hot Battery Now! Long Life with care, 10 Years.

SEE YOUR DEALER

ORDER TODAY ON 5 DAY TRIAL. SEND $5.00. PAY BALANCE C.O.D.

GREAT LAKES BATTERY CO.

DEPT. 27—KENOSHA, WISCONSIN

WANTED

10,000 MODEL FLYERS

TO TRY THE NEW

ENYA TYPHOON

"19" ONLY $10.95

"29" ONLY $13.95

REWARD 10,000 HAPPY

FLYERS WILL HAVE A LONG LASTING ENGINE THAT WILL GIVE THE UTMOST IN PERFORMANCE.

BUY AT YOUR HOBBY SHOP NOW

EUREKA IMPORTING CO.

4264 Euclid Ave., San Diego, Calif.

are also going toward new events and endeavors. Alas and alack, we don't hear of attempts such as this in our country! Anyone have any good ideas or flights that the rest of us haven't heard about?

Interested RC fliers in the Carolinas are invited to write to Ralph N. Corelle, 834 Fairmont Ave., Salisbury, N. C. for information on the North Carolina Radio Control League, a state-wide organization representing 15 clubs and many independent modelers. One unusual event held around the first of December featured a "target hitting" spot landing. The target was a stick on which was fastened a $5.00 bill. Warren Hall hit it twice to pocket the green stuff. Now this sounds like a bit of incentive for a good spot landing.

It is felt that the SE-5 biplane in the January issue, by Chester Lanzo, is a big step forward in RC flying. Nothing looks better in the air than a good scale job, especially a biplane. Norm Davis has been flying semi-scale biplanes of his own design for about five years and for sport flying, they can't be beat. Norm is an entomologist for the State of New York and has aptly named his series of RC biplanes June Bug I, June Bug II, etc. A recent flight of his Live Wire Trainer disclosed, after coming down, that he had forgotten to take the plate meter out of the ship before launching. Outside of his having to hold a little right rudder most of the time, the flight was okey.

END.

Import Review

(*Continued from page* 31)

the oldest and best established concerns in Italy, with a complete spares service through Devere Enterprises.

The intake design is yet another illustration, like the Ferrari sport car, of the Italian instinct for getting right to the heart of the matter, when it comes to fast machinery. Having decided that a disc rotor entailed too much additional friction for such a small engine, the designer presumably set about evolving the ultimate in shaft induction. This obviously depends on getting the maximum port area possible into a practical size of shaft without weakening it. The port is therefore placed well away from the inner bearing, which is the point of greatest deflection, and since timing governs width, the area is obtained by making the port very long. The coring and machining of the corresponding intake port can only be executed through the intake and so this is made very large also and subsequently reduced to a size suitable for efficient carburetion by the plastic inserts. The bottom of the intake terminates in a rectangular port that is 7/32 x 3/8, which means that, with no reducer fitted, a carb. throat of 3/8 diameter is available and it was found, much to our surprise, that with gravity fuel feed this .60-sized breathing equipment would actually permit smooth running at very high speeds and offered 200 more rpm than the largest reducer.

An output of .29 bhp at 16,500 rpm is claimed by the makers, and we believe it. A 1/4 in. American thread long reach plug and a plug and prop nut wrench are included.

Devere Enterprises, Box 1126, Jacksonville, N. C.

BWM 250D (.15) Diesel (Berliner Werkstatten fur Modellmechanik)

Here we have another .15 import, but of an entirely different nature and, in its way, equally attractive. The BWM is a very potent torque producer that is also capable of reasonably high revs. For a Diesel of its size it runs remarkably smoothly at all speeds, especially between 11,000 and 13,000 rpm, where its power peak seems to lie, which in itself makes the engine of considerable interest to the radio fraternity. Perhaps the

(*Continued on page* 48)

FOR .19 TO .29 ENGINES

dmeco's *Continental*

FULL STUNT MODEL

Now

A SEMI-SCALE AIR RACER
WITH TOP STUNT PERFORMANCE
A FINE SUPER DELUXE KIT,
PLUS DMECO'S FAMOUS QUALITY!

10 YEARS OF PROGRESS BUILT INTO ONE DESIGN!

The "Continental" is our 10th anniversary model, a sterling performer resulting from 10 years experience being offered all in one kit!

In the "Continental" you have built-in design features which result in unheralded maneuverability, any stunt in the book is well within your ability when you fly a "Continental"! Patterned closely after some of the finest midget air racers ever flown it possesses their attractiveness and yet its completely functional design allows the fine flying that you desire!

The "Continental" performs the extremely difficult AMA stunt pattern without the slightest hesitation, yet it is amazingly simple to assemble, a dream to fly and a masterpiece that is a pleasure to own!

A WINNER'S SPECIFICATIONS . . . .

★ Wing Span: 40"
★ Wing Area: 350 sq. in.
★ Design Weight: 24 oz.
★ Power: .19 to .29 engines
★ Flying Speed: 60 to 70 MPH
★ Type: Contest Stunt
★ Design: Semi-scale Air Racer

AN OUTSTANDING KIT . . . .

★ GIANT, detailed, full size plans; instructions!
★ GRADE A1 SELECTED PREMIUM BALSA!
Precisely machined parts
Sharply die cut
★ Hard maple mounts, etc.!
★ Formed dural scale gear!
★ Decals!
★ Covering materials!
★ Complete hardware!

THE VERY FINEST FOR RADIO CONTROL

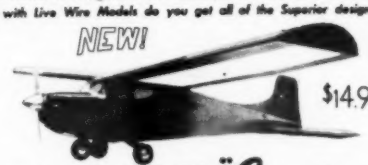
"LIVE WIRE"

The name that signifies the PROVEN BEST for all R/C flying.
Only with Live Wire Models do you get all of the Superior design Features!

$6.95

THE "TRAINER" .08-.15 ENG
THE WORLD'S MOST POPULAR R/C MODEL!

NEW!



$14.95

FREE FLIGHT

$2.95

1/2A

THE "CLIPPER"

$14.95

THE "SENIOR" 19-23 ENG. CUSTOM BUILT

LIVE WIRE "Cruiser" $39.95

dmeco's NEW REALISTIC RADIO CONTROL MODEL!

Typical of the Live Wire models is the Cruiser, its well balanced design provides extremely realistic flight with fine aerial performance and great weight carrying ability. Construction is simple and rugged, the model is for reliable R/C use. Live Wire kits are complete with finest A1 materials, precision finished ready for assembly. Plans are full size and include instructions for building, radio installation and flying. All necessary hardware is given including R/C linkages and horn.

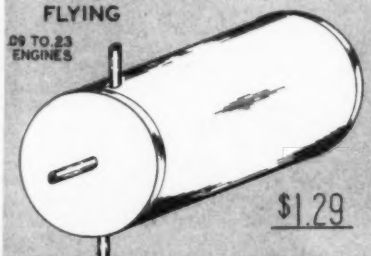
THE "KITTEN" R/C

FOR THE BEST R/C FLYING _____.

ACCESSARIES APPROVED BY THE EXPERTS!

R/C AND CONTROL LINE FLYING

.09 TO .23 ENGINES



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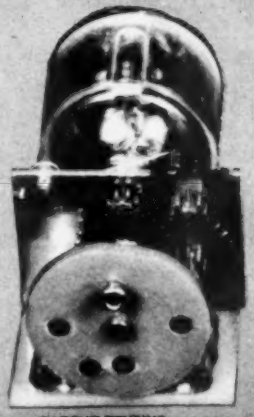
THE TANK WITH THE "INTERNAL SWIVEL"
SIMPLE TO USE | FEEDS FUEL FROM ANY POSITION
DURABLE | SIZE: 1 1/2" DIAM. X 2" L. 2 OZ. CAP.



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MOTOR DRIVEN R/C ACTUATORS

POWERFUL-DEPENDABLE!

FOR BEGINNER OR EXPERT!

Using your simple single channel radio *without* changes you can have your choice of single or *multiple* controls, *selective* to your command. Install one in your model now and use *less* batteries at a lighter weight! There are no linkage or rubber band problems, those worries are gone forever with ½ lb. torque, motor driven "Multi-Servos"

4 GREAT MODELS, ONE FOR EVERY R/C NEED!

MODEL 2PN . . . $11.95
Two positions with an automatic neutral, for single control operation.

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Two positions with an automatic neutral, plus a 2nd actuator circuit added.

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Two positions with two neutrals, use separately or with 3PN for second control.

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Three positions without an automatic neutral, for auxiliary controls.

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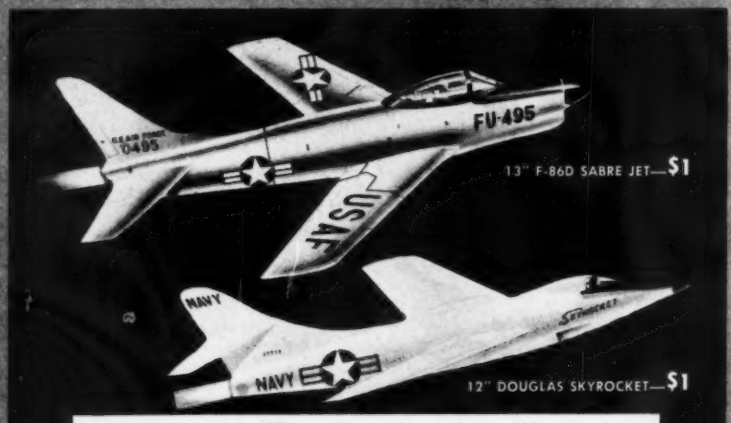
A Product of the J-BOLT MODEL ENG.

Beautiful scale models

GUARANTEED TO FLY *designed by* CARL GOLDBERG



13" F-86D SABRE JET—$1

12" DOUGLAS SKYROCKET—$1

NEW These Superform Scale Models have amazing new **formed balsa fuselage shells** and **molded plastic parts!**
You can get scale model beauty, and flying model thrills! **and they go together like magic!**

TRAINEE—$3.95
30" span
.19 to .49 engines
Control-line, great for beginners!

LI'L RASCAL—$1.50
27" span—½ A engines
Free-flight and control-line, easiest to build!

Nothing to carve on these GAS MODELS—everything is PRECISION PRE-FINISHED!

9" SABRE JET —25¢

18" RASCAL 18 —59¢

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USE TOP FLITES and POWER PROPS... *the props of champs!*
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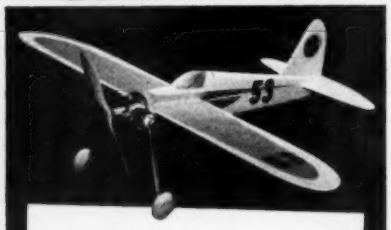

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is more fun than a circus. Get together several PUPS painted team racer style like the brilliant yellow and orange job above. These little ships are fast and rugged and can be flown in that vacant lot

¼A ENGINE, 17½" SPAN - - - - 95c

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NYLON ORANGE WHITE **1.15** PER YD.

Light weight, strong, ideal for all types of planes 36" width

SILK ORANGE RED YELLOW WHITE **95¢** PER YD.

36" WIDTH

Please send cash, check or money order. Sorry, no C.O.D.

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BROOKLYN 3, N. Y.

MONEY BACK GUARANTEE

most appealing aspect of the engine is the obvious care and high standard of workmanship reflected in every detail. The finish is excellent and has evidently been improved, after machining, by hand, to produce an effect and color scheme of black that is fuelproof, unlike many engine finishes, and polished metal that will add an appearance of quality to any model.

The basic layout of the engine is conventional to those familiar with European Diesel design, being very similar to the Elfin 1.49 and 2.49 described in the first part of this review, with radial exhaust and bypass ports, shaft rotary valve and beam mounts, but there are several extras which include a spraybar unit inclined backward and upward to carry the long needle well clear of the prop and a right-angled fuel line connection to obviate kinks. A strong injection-molded transparent fuel tank of large capacity is rear-mounted and a polished aluminum spinner nut embellishes the front. The taper driven prop driver is also polished and carries a 3/8 diameter prop locator. A brass stud, screwed into the spinner and retained with a locknut, is screwed into the tapped shaft for prop retention. This overcomes the common trouble of studs which jam in the crankshaft and cannot be removed without ruining the stud.

The backplate is retained by two long bolts and nuts, passing through the beam mounting lugs, which, while not entirely suitable, could be used for radial mounting if added strength were derived from a third screw passing into the tank retaining screw tapping. A very small bore intake, which gives a prodigious amount of suction in conjunction with fairly conservative timing, and a sensible sturdy compression control, add up to a soundly designed, durable and beautifully produced load puller that will be appreciated. A wide range of accessories, including complete marine equipment, water jacket, exhaust manifold, needle extensions, etc., and all spares, are immediately available from the importers.

Moen Trading Co., 225 W. 34th St. New York, N. Y.

Enya .29 Glow Plug Engine

This is another soundly produced import with extras, that is not new in design principles, but is the equal on every score with its American counterpart, and has a number of details which make it attractive to the enthusiast. It is generally accepted that most model engine development, apart from the Diesel, begins in the States, and their origin is usually quite easy to recognize in foreign engines. The Enya .29 from Japan is no exception, except that it has several parents. The block, for instance is very similar to the McCoy .29 Sportsman, but it is lighter and less sturdy. The bypass is larger with better contours, while the exhaust stack is smaller and less efficient, having an airfoil shape similar to many pre-war engines. The standard of casting and machining is high and the grey etched finished is attractive with polished fins. The forward part of the engine smacks of the Fox .29 with a crankshaft that is almost identical, except for a heavier counterweight. The bearing housing is bronze bushed, with a large intake raked forward at 45° and a removable reducer. A sturdy polished aluminum prop driver is taper fitted and knurled, and is supplemented by a machined aluminum washer and nickel plated nut. The spraybar unit, including the spring extension needle, is brightly nickeled and very well made with a double ratchet and good progressive adjustment.

The Fox-type liner is a first class slip fit with an unusually good bore surface and the piston, although not relieved, has the same origin. The very rugged pressure cast conrod has a bronze bushed big end and long small

end bearing, engaging with an aluminum padded tubular wrist pin. The deeply finned head, of most attractive appearance, has a cast in brass plug bushing threaded for American long reach plug. In case these comparisons offend anybody, let us point out that imitation is the finest form of flattery, while the imitator shows good judgment in imitating the right features. The result of this particular mixture is a first class engine that should prove dependable: it has good performance characteristics for aerobatics, lots of power and is well finished. An illustration of the labor that goes into some foreign engines is typified by the Enya, inasmuch as there is no evidence of grinding on any component, all fits having been achieved by meticulous lathework, and probably a touch of emery cloth.

A .19 of identical construction and appearance will also be available in the U.S. with an alternative radial mounting.

Eureka Importing Co., 4264 Euclid Ave., San Diego 15, Calif.

This concludes the review of available samples of imported engines for the present. Another Import Review will appear in a near future issue. END

Engine Tests Summarized

(*Continued from page* 27)

adopted since the inception of MAN tests, the reed valve is probably the most significant, with axially clamped cylinder liners second. Excellent ideas which may never become popular, owing to inconvenience, include the combined plug filament and head unit and the combined rear-mounted carburetor and fuel tank unit; the new features of interest to most American modelers are undoubtedly two-speed carbs. and compression ignition, and for boat fans, the outboard motor. The laurels for raising performance standards go to the Cox Space Bug and the K & B .15 in the small sizes, and the McCoy .60 in the larger and, for taking some of the heartache out of starting and running Diesels by the less experienced, the orchids go to Herkimer for their contrapiston shock absorber.

Although we are still simply belting tiny pistons up and down tiny cylinders and have been for twenty years, it is remarkable how every month seems to bring another refinement from the apparently inexhaustible flow of modeling ingenuity, and let us never lose sight of the fact that, though they make a living, the trade is, in most cases, the cream of the modeling world, and could find many, many less precarious and less exacting ways of buying the groceries, were they not suffering from the same disease as us all—modeling fever.

Other reactions from the reader survey show that a lot of people dislike ploughing through columns of dimensional and material description before they reach the "meat" of the report regarding running behavior and performance and many would like more comprehensive views on job suitability, best plug for each load, lowest vibration speed and other information directed at getting the best results in a model. However, there is also a faction that simply likes engines and the things inside, and finds the more technical description revealing. We are therefore dividing the reports in future into three definite sections, so that you can skip the parts that are of no direct interest, and are adding extra data in the performance section to assist in determining job suitability. The tests will therefore feature "General Description," "Design and Engineering Report" and "Handling and Performance" sections.

In conclusion, we really appreciated your letters, and hope you find the reports as helpful as we find them fascinating to write. END

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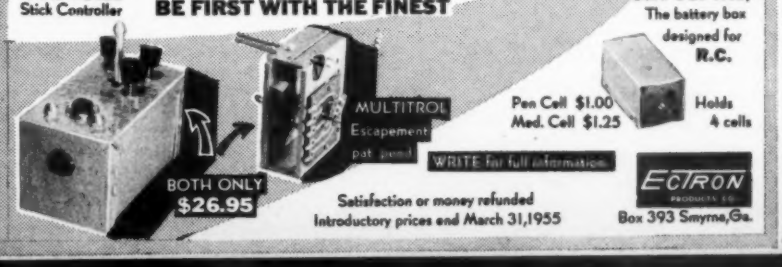

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Flash News

(*Continued from page 7*)

co-winners: James H. Kindelberger, chairman of the board of North American Aviation; and Edward H. Heinemann, chief engineer of the Douglas El Segundo Division. Kindelberger was honored for the F-100 *Super Sabre* and Heinemann for the XF4D-1 *Skyray*, the nation's first two supersonic aircraft to go into actual service. The F-100 holds the current official world's record of 755.149 mph, set Oct. 29, 1953; and the F4D, the three-kilometer record of 752.943 mph set a month earlier.

Capital Airlines has exercised its option on a final group of 20 Vickers Viscount turboprop airliners to bring its total order to 60 at a cost of about $67-million. Thus, Capital will eventually become an all-Viscount airline, planning to replace its current 21 DC-3, 25 DC-4 and 12 Constellation transports completely. First Capital Viscount is scheduled to enter service in April, 1955 with the last of 60 scheduled for delivery in February, 1957. The Viscount is about the size of the Convair Liner but has DC-6/Super Constellation speed, placing Capital in an advantageous competitive position.

Curtiss-Wright announces development of the first rocket engine capable of being throttled up and down and being stopped at will. Developed over the last four years, the new engine is intended for installation in the Bell X-2 research airplane, which has been undergoing development for nearly a decade.

"Cool pilots" is the latest solution to the problem of skin friction heating of high-speed aircraft. The British have developed a nylon cooling suit containing a network of tiny tubes through which cooling air is pumped from the main airplane supply. After completing a "cool" flight, the pilot moves quickly from his airplane to a waiting "de-cooling" van and thence to a shower where his temperature is increased gradually to avoid catching cold. The suits are being service tested by an RAF Canberra squadron based in Germany. Only drawback reported so far is that the suits are made of transparent material, requiring flight crews to hasten to don exterior garments when entering or leaving their planes.

A famous name is coming back into the airplane business. The Monocoupe Meteor, a twin-engine, four-place executive transport, has been completed by the revived Florida company. The new design is powered by two 150-hp Lycoming engines and cruises at 180 mph on 70 per cent power. It carries its 70-gallon fuel load in wing-tip tanks. It weighs 3,100 lb. and has a range of 850 miles. Monocoupe, long-time light aircraft builder, hopes to re-enter aircraft production with this new design now being flight tested.

Trans World Airlines, which has suffered from Douglas DC-7 competition on transcontinental service with American and United, may soon leapfrog the competition with an order for turboprop-powered Lockheed Super Constellations. Commercial version of the Navy R7V-2, the powerful Super Connie with four Pratt & Whitney T34 turboprop engines, could cruise at 400 mph over transcontinental and transoceanic ranges.

Douglas Aircraft Corp., now at work on the C-132, world's largest aircraft, is installing an experimental Pratt & Whitney T57 turboprop engine in the "baby" C-124 *Globemaster* for test purposes. The giant T57 is expected to deliver 15,000 hp for the monster C-132, which is believed to have a gross weight of 500,000 lb. Four T57's are planned as the powerplant for the C-132, although other turboprop engines in the 15,000-hp class are under development.

North American Aviation has released complete performance figures on its TF-86 two-seat jet trainer and they are of interest as a close approximation of the standard F-86F performance. The TF-86 is revealed to have a

(*Continued on page 53*)

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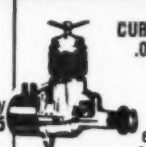

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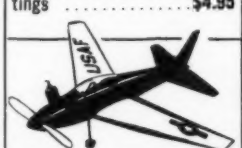

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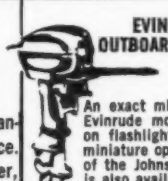

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Foreign Notes

(*Continued from page 37*)

Wilmot Mansour & Co., Ltd., the British Jetex manufacturers, where Judge is chief of the Experimental Dept., have produced many fine and original models. Their new model space ship is, admittedly, a novelty which does not belong to serious model aeronautics, but it is interesting, nevertheless. The ship is a 13-1/4 in. long, 2-oz. craft, using a 50B type motor and augmenter tube and is launched from a special ramp.

The model is claimed to ascend to some 150 ft., after which a nylon parachute pops out of a hatch in the nose to lower it gently to earth. The launching ramp, be it noted, is "designed also for the launching of high-speed model aircraft and *miniature guided missiles* . . ." Sounds like a death knell for such tame pastimes as controlline combat. Watch out for that RC job.

New Dutch Escapement

Miniatuur-Motorenfabiek Typhoon of Amsterdam make RC equipment as well as motors and their latest product is an escapement. This is a two-position self-neutralizing type and is very similar in design to the Super-Aerotrol escapement. Like most European escapements, however, the operating spindle is straight, not cranked. Pawl arrangement allows the rubber motor to be rewound via the escapement instead of having to disconnect it or wind from the opposite end, as with some escapements. Typhoon escapement is of robust construction and weighs 9/10 oz.

New Norwegian Motor

Noted for producing some of the most beautifully engineered and best finished motors in Europe, Norway's engine manufacturer, Jan David-Andersen, will have his new .06 cu. in. Diesel in production by the time these words appear. About 2,000 will be built during 1955.

Big Fuss over Engine Testing

Our comment under the above heading in November brings reply from the British magazine in question, in which valiant efforts are made to confuse the issue in the hope that readers will overlook its earlier unfortunate statements anent engine testing. Said mag has now reached no less than *76 per cent* greater power than the .05 bhp/cc. specific output figure it had laid down as maximum possible (and is now trying hard to forget). This was with .15 contest Diesel and is *50 per cent more power* than same magazine's unfortunate test of the Torpedo .15, on which it based its "half-power standard." Even ordinary non-contest type motors are now credited with 50 per cent higher power, culminating in a bhp figure for the Allbon Merlin only *seven per cent* below that recorded in our own test of this motor as previously submitted to the manufacturer. Magazine excuses itself thus: "We hardly expect engine design and output to stagnate." Fast work! So engine performance jumps 50 per cent in three

END

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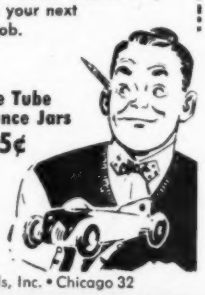

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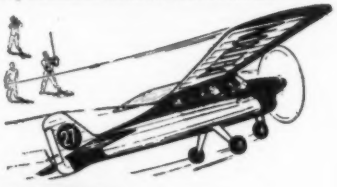

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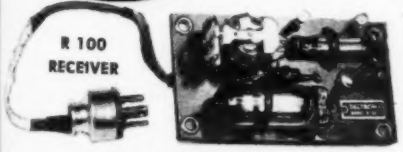


Here's your dream of dependability; does away with repeated adjusting, tuning and testing. Weights only 2 oz. including plug. Size 3" x 1⅝". Rugged. Engineered to "take it." Complete, fully assembled of new, top quality components. **$24.95**

T 100 TRANSMITTER
3-watts+ power packed into a light easy-to-carry 3" x 5" x 7" case. Micro-action keying button, telescopic antenna. Complete with tube, and crystal, less batteries. **$29.95**

24-hour Service Write Today

DELTRON CO.

1940 CONQUISTA AVE., LONG BEACH 15, CALIF.

Flash News

(*Continued from page 50*)

top speed of 691.15 mph at sea level, a rate-of-climb of 10,300 fpm at sea level, a combat ceiling of 47,500 ft. and a range with two 200-gallon drop tanks of 1,291 miles. The TF-86 is now on a nation-wide demonstration tour of Air Force bases.

The National Air Museum of the Smithsonian Institution in Washington, D. C. has accepted Steve Wittman's famed "Buster" home-built midget racer for permanent display as an example of historic aircraft.

After several years of experiments, the Civil Aeronautics Administration has developed a successful rotor-tip light for helicopters to distinguish them from fixed-wing aircraft at night. Currently, night-flying helicopters use a variety of blinking and oscillating lights on the fuselage but the centrifugal force generated by the rotor tips have made tip light development a major problem. The successful new light weighs less than 1 lb., requires less than 300 watts of power and is visible against city lights for a distance of more than six miles.

END

the Two Timer

(*Continued from page 20*)

your sharpest blade, cut the sections out of the surfaces. Be careful to cut the corners round as this adds strength. After these sections have been removed, sand out to a uniform line. Now add 1/16 sheet ribs to the wing. Use the same method in building up the stab. The stab ribs are from 1/16 square wood. Now sand all ribs to coincide and blend with leading and trailing edges.

Cover these surfaces with bright red or orange Japanese tissue. Trim tissue to the same outline as the sections cut out of the surfaces, allowing 1/4 in. for overlap. Apply tissue to wings, watershrink and let dry. Now brush three thin coats of clear dope over tissue. After this dries completely, you are ready for testing.

The ship should balance at 60 per cent of the wing chord. We allowed our gliders to remain slightly tail heavy and then embedded that much of the ballast permanently into the nose of the fuselage. Wrap several rounds of masking tape around the nose. You obtain the final trim by tearing off short lengths of the tape until the ship is gliding very close to the stalling point. We prefer tape to clay because it will not come off, as does clay. Also, if tape is applied at the end of the nose, it will afford some protection in the event of a rough landing.

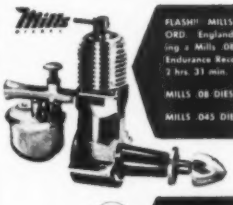
Now for flying. Grasp the model in the conventional manner and launch as straight up as you possibly can. The glider should proceed to climb without turning or rolling. After momentum is exhausted, it should do a half roll and go into the glide with practically no noticeable loss of altitude. This high degree of transition can be attributed to the butterfly type stabilizer. Observe the glide closely to see if there is any built-in turn. Now add a small flexible trim tab to the wing to coincide with the turn. Reduce or enlarge the diameter of the circle by adding a small amount of weight to the tab, or trim down the size of the tab. By utilizing a wing tab instead of surface warps, we retain the straightaway launch which affords a much higher altitude. Incidentally, if you wonder why we dubbed the model "The Two Timer," here is an explanation. The first reason is that the novice can expect flights comparable with those of the neighborhood expert. Secondly, one can construct the solid version as well as the built-up type from the same set of plans. We sincerely hope that this short resume will instill some new enthusiasm for this popular but much neglected aspect of our hobby.

END

WORLD ENGINES - FREE AIR MAIL

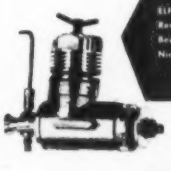
WEBRA MACH-I .15
EDDY CURRENT DYNAMOMETER TESTS prove this engine to be the WORLD'S OUTSTANDING .15 at 17,000 R.P.M. - .31 HP. Features twin ball bearing shaft. ENORMOUS PORTING
$13.95

WEBRA .049 Cu. In. PICCOLO
Ground Contra-piston eliminates replacing compression ring HP .075 at 14,000 RPM. Put this little BULLDOZER in that 1/2 A contest job (especially PAA)
PICCOLO — Shown $7.85
WEB - WINNER .15 cu. in.—Most Popular European Engine $9.95
WEBRA RECORD .09 cu. in. Excellent for R/C $8.85



FLASH!! MILLS SETS NEW WORLD'S RECORD. England's Hilton O'Heffernan using a Mills .08 Diesel Ups World's R/C Endurance Record from 1 hr. 40 min. to 2 hrs. 31 min.
MILLS .08 DIES WITH THROTTLE $13.95
MILLS .045 DIES WITH CUTOUT $9.95

NORWAY'S ANDERSEN .15 DIESEL Here it is—THE BRUTE. Powerful. Styled with Chrome Plated Head and Grey Mat Finish. A smooth running, high torque engine $13.95



ELFIN .099 CU. IN. BALL BRG. DIESEL Revolutionary Crankcase Styling — Ball Bearing — Clapper Valve Fuel Induction. Nickel Chrome Crankshaft Wt. 3½ oz.
$13.95

GLO 35

OS MAX 35 - STUNT
The hottest .35 in the world! Horsepower .78 at 17,000 RPM. Comp. Ratio 8 to 1. Displ. .355 U.S.A. Glo Plugs for Max .35. Complete with dust covers and 2 Venturi Inserts.
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PRE-FABRICATED KIT INCLUDES:

- Full Size Plans with R.C. and PAA-Load Installation Details
- Sharply Die-Cut Balsa
- Formed Metal Landing Gear
- Hardware
- Covering Material
- Die-Cut Celluloid
- Mahogany Motor Mounts
- Authentic Full Color Decals
- Die-Cut Mahogany Plywood
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- Selected Strip Balsa
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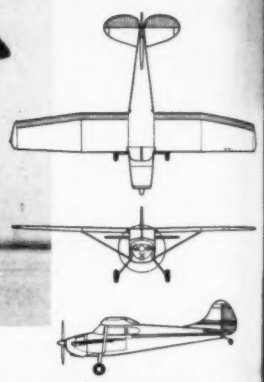


Berkeley's

CESSNA "170"

Designed by: Henry Struck

$9.95

For Radio Control — Free-Flight — PAA-Load

For .25 to .35 Engines — 72" Span — 2" Scale

Controlling your "170" by Radio is a thrill you will never forget! Perfect scale, rugged, stable in all attitudes, yet responsive in control with good wind penetration qualities. Gear location is ideal for extended take-off runs, while its larger size makes it less sensitive to turbulent air. A large cabin makes extra radio installations easy.

The plans include a wealth of scale details which will appeal to the master craftsman. Inexperienced builders will find construction simplified by the full size plans, sketches and assembly technique.

Inspect the "170" and its many features at your dealer. Study its design, examine the material, and visualize its performance on the contest field.

R.C. AMPHIBIAN...

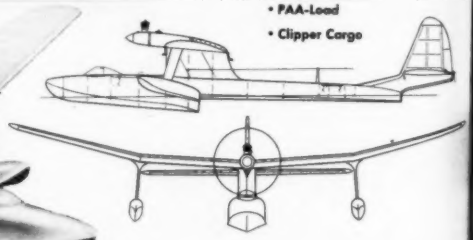
Fly it on Ponds – Rivers – Bays – Lakes or Flying Fields!

Fly it Five Ways:

- [illegible] (R.O.W.)
- [illegible] (O.S.)
- Radio Control
- PAA-Load
- Clipper Cargo

- Detailed Full Size Plans
- Shaped Leading, Trailing Edges
- Die-Cut Balsa and Plywood
- Celluloid Bubble Canopy
- Metal Ring Cowl
- Hardware, Covering Material
- Selected Strip Balsa

$7.95



Henry Struck's "SEA-CAT"

N.A.C.A. Type Planing Hull Amphibian

For .15 to .25 Engines — 68" Wingspan

First All-Purpose Gas Model

Here is a model design that has been a full thirteen years in development. It's N. A. C. A. Planing Hull design makes water take-offs easy. Its hull is easily accessible for radio control equipment, PAA Dummy Pilot or Clipper Cargo.

Proven performance on the original test models include: First International Radio Control Flight; Fourth place in a field of seventy in the Mirror Flying Fair (The first R.C. contest for both Struck and the "Sea-Cat"); First in Radio Control at Screamin' Demons Long Island Sound Hydro Championship; Second in PAA-Load at the same contest; and Precision flights carrying over a pint of fuel at the First "World Model Air Olympics."

NEVER ANYTHING LIKE IT... A 32" FORMED PLASTIC HULL!

Chris-Craft

RADIO CONTROL OPTIONAL!

1" = 1' Scale — 32" Overall

"32' CRUISER"

For up to a .29 Gas Engine or two Miniature Electric Motors.

At your Dealers or via Railway Express Collect.

- 32" High Impact Vacuum Formed Plastic Hull
- Formed Plastic Cabin with Mahogany Overlay
- Full Size Plans, R.C. Installation Details
- Cast Marine Deck Fittings, Authentic Decals

Destined to change all concepts of model boat construction with its formed plastic hull and cabin, is this masterful reproduction of the ever-popular 32 foot Chris Craft Cruiser. Gone are planking and leakage worries, gone are long hours of hull construction and alignment, time which you can spend to better advantage installing radio control devices or in adding interior decorations. Gleaming white hull, trimmed

Two New King Size "Championship Flying Scale" Designs -

Berkeley's

Our Flying Scale Designs have won at every Nationals since 1938!

PIPER "TRI-PACER" PA-22 "150"

Replacing the Nationals Winning "Piper Super Cruiser"!

$5.95

Structurally designed for the rigors of R.C. and Controline Flying. Its strength to weight ratio in free-flight permits active flying.

FREE-FLIGHT: Aileron, thrust, flap, elevator and rudder trim on field. Steady and consistent performance, easy to adjust and fly.

RADIO CONTROL: Designed for rudder control with optional R.C. wing flaps, motor control and automatic up elevator trim. Nose gear may be made to caster or operate by servo. Two cabin doors and hatch provide easy access to equipment. (126 cu. in. cabin.)

CONTROLINE: Details shown for installation of "U-Control" system. Ample strength for maneuvers, landings, rough handling. Ailerons handy for setting trim. Try two-speed engine, shoot landings, etc.

Designed by: Don McGovern

1½" = 1' Scale—44" Wingspan

Authentically designed from the factory plans! Structurally similar to full scale "Tri-Pacer."

For .065 to .099 Engines—Radio Control
.035 to .075 Engines—Free-Flight
.075 to .15 Engines—Controline

DESIGN FEATURES:

- Adjustable Thrust on Field
- Shock Mounted Nose Gear
- Shock Mounted Wing Panels
- Pop-off Wing Struts
- Fully Cowled Engine
- Sheet or Built-up Tail
- Self Aligning Fuselage
- Fully Detailed, Authentic

KIT FEATURES:

- Authentic Decals
- Three Rubber Wheels
- Formed Wire Landing Gear
- Full Size Plans with R.C. and Controline Details
- Sharply Die-Cut Balsa
- Die-Cut Mahogany Plywood
- Hardware, Silkspan Tissue
- Die-Cut Celluloid Windows
- Prefabricated Parts

"½A" Flying Scale DE HAVILLAND "BEAVER"

Authentically designed from the factory plans!

- Formed Metal Ring Cowl
- Sheet Metal Landing Gear
- Rubber Wheels
- Tapered Trailing Edges
- U. S. Air Force Decals
- Three Rubber Wheels
- Genuine Silkspan
- Full Size Plans with R.C. and Controline Details
- Sharply Die-Cut Balsa
- Die-Cut Mahogany Plywood
- Hardware,
- Die-Cut Celluloid

FOR FREE-FLIGHT— RADIO CONTROL— CONTROLINE

1" = 1' Scale
48" Wingspan

$4.95

For .049 to .075 Engines—Radio Control
.035 to .075 Engines—Free-Flight
.074 to .15 Engines—Controline

This high aspect-ratio Canadian Bush Flying type aircraft is now in use by the U. S. Air Force. Ideal as a free-flight, reinforced for R.C. and Controline contest or sport flying.

FREE-FLIGHT: Contest performance possible. Easy to adjust, and an excellent design for less experienced scale flyers.

RADIO CONTROL: Recommended for precision flying, as trainer, two-speed work, shooting landings, etc. Realistic performance.

CONTROLINE: Long moment arm provides full range of control on take-offs, landings, and throughout flight. Very easy to fly!

For Free Flight "½A" Flying Scale—Rubber—or Controline

$2.95

Cessna L-19 **BIRD DOG"**

$2.95

"SUPER CADET"

Current version of "Interstate Cadet," many time National's winner.

$1.95

FAIRCHILD 24 "RANCHER"

First at '53 and '54 Nationals!

$2.95

CESSNA "180"

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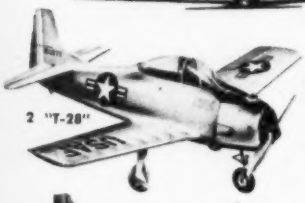
AUTHENTIC REPLICAS OF THE WORLD'S MOST FAMOUS AIRCRAFT—

Masterfully Detailed—Highly Pre-Fabricated—Easy-to-Build!

1 "P-47 THUNDERBOLT"

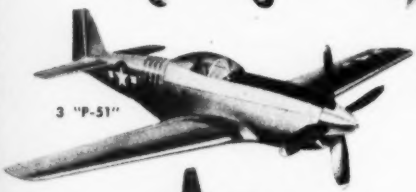
7 CESSNA "195"

9 "SHOESTRING"


2 "T-28"

CURTISS HAWK "P-6E"

10 "T-34-A MENTOR"


3 "P-51"

11 "AT-6 TEXAN"

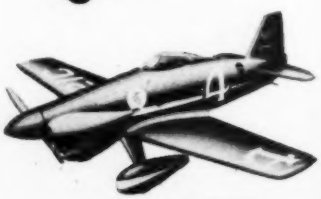
4 "F-8-F BEARCAT"

5 GRUMMAN "GUARDIAN"

12 "AJ-1 SAVAGE"

"P-40 WARHAWK"

13 "PITT'S SPECIAL"


14 "MINNOW"

1 **Republic "P-47 THUNDERBOLT"** **$4.95**
For .29 to .65 Engines — 41" Wingspan
Automatic Wing Flaps; Engine Throttle Control

2 **North American "T-28"** **$5.95**
For .23 to .36 Engines — 30" Wingspan
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Metal Cowl; Step-Keel Fuselage Construction

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For .09 to .15 Engines — 24" Wingspan
Metal Cowl; Metal Wheel Pants; Colorful Decals

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Each Kit is Pre-Fabricated and Contains:

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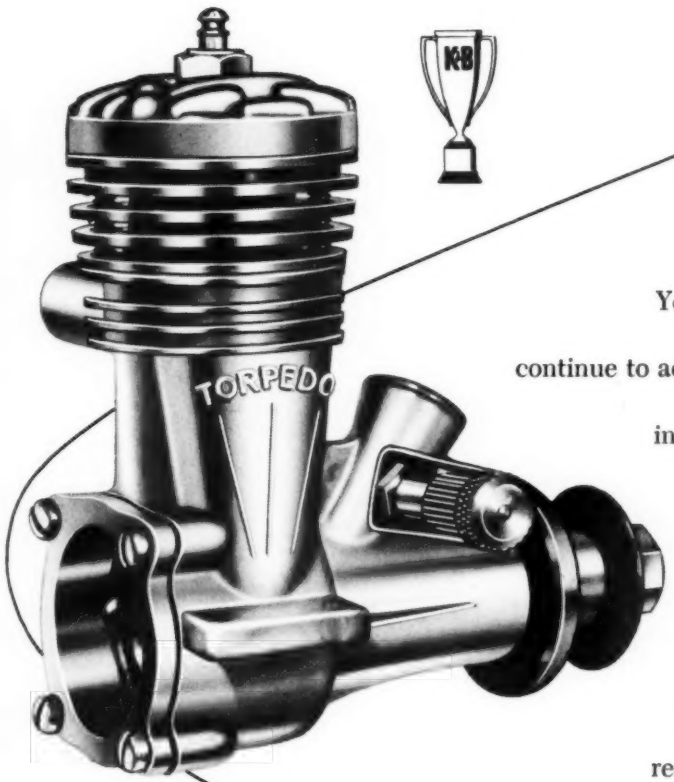
The engine with winning ways



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. . . a fuel for every engine . . . every use!

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NEW!
REMOTE CONTROL THROTTLE

U-CONTROL'S 3RD DIMENSION
...lets you fly indoors!

Now garages, hangars, gymnasiums can become your wintertime flying fields! Indoor flying at slow throttle is just one of many new flying thrills made possible by the Remote Control Throttle "Firebee". This newest development by Jim Walker adds a 3rd Dimension to U-Control. Here, for the first time, is a self-learning plane you can fly slowly, quietly, in a small radius without dizziness. Now you can get in "flying time" most anytime. You can roar down the runway, climb for altitude, cruise along at desired speed. Or, you can shoot landings, hover in mid-air, land and taxi in, refuel with the engine running—then take off again. Flying is *more fun*...with Remote Control Throttle!

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All parts streamlined smooth. Long-range fuel tank with "anti-stall" reservoir and filter. Remote U-Control handle, flying lines, propeller, canopy, tricycle landing gear with wheels, all hardware, decals, advanced flying course. Includes Jim Walker "Firecracker" Engine with "Power and Silencer Control" **$14.95**

Now at your nearest hobby counter

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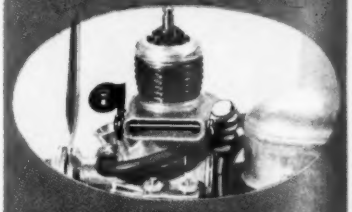
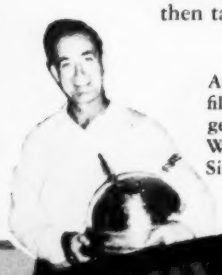
Finger-operated Throttle Control on U-Control Handle



...actuates "Power and Silencer Control" on the engine.



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New, "Free-Wheeling" Prop. T-56 Contest Rubber with vial of rubber lube, "Snap-Free"

"FIREBABY"
Span 19". Comes ready to fly, with flying lines, instructions.
$2.50

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Span 43". Stunt, Precision Combat plane. All parts completely finished.
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